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URBAN, GREEN AND EDIBLE

- An Investigation of the Urban
Agricultural Landscape of Xi'an



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ABSTRACT

An ongoing urbanization process is changing the landscape of contemporary China. Agricultural lands are being used for real estate development, resulting in a further dependency of agricultural products from the global market. Additionally, a cultural offset is taking place, from being based on the old agricultural society to conforming to western ideals and traditions. One example of this is the adoption of the short-cut, monocultural grass lawn. The lawn consists of grass species unfamiliar to the Chinese climate and the usage of it, results in negative environmental effects. However, there are a multitude of examples in China where agriculture is being practised in urban environments, often on what used to be lawns.

This master thesis concerns urban agricultural practice in the Chinese city Xi'an, Shaanxi province. The aim of conducting this study was to assess the existing situation concerning urban agriculture (UA) in Xi'an and its place in the city's green infrastructure by analysing the UA effects and potentials. Furthermore, this thesis aims to determine some design

principles, which could support environmentally and culturally beneficial practice of UA for food production in Xi'an. The methods used to achieve this were literature studies, map studies, site visits, interviews and field observations. Collected data was documented through writing, photography and recordings.

UA was concluded to have many potential benefits in addition to being a source of food. Examples of these potential benefits are; community building properties, enrichment of urban biodiversity and specifically for China, the potential to reconnect to the country's agricultural roots. However, these benefits are not absolute. UA can among other things be a source of conflict as well as a source of environmental pollution and contaminated food. Furthermore, there are many uncertainties surrounding the subject. Because UA is often neglected in governmental planning processes, these issues can be difficult to address. Hopefully this master thesis and the determined design principles, can be a small contribution to guide future organisation and design of UA towards a beneficial result.

SAMMANFATTNING

Kinas pågående urbaniseringsprocess förändrar kontinuerligt landskapet och ersätter jordbruksmark med fastigheter. Detta förstärker Kinas beroende av livsmedelsprodukter från den globala marknaden. Dessutom sker en kulturell förskjutning, från att ha varit baserad på Kinas agrikulturella historia till att successivt ta efter västerländska ideal och traditioner. Ett exempel på det är Kinas ökande användning av de kortklippta, monokulturella gräsmattorna. Gräsarterna som används i gräsmattor är obekanta för Kinas klimat och användandet av dem får negativa miljöeffekter. Det finns dock en mångfald av exempel där urbana gräsmattor i Kina tagits i anspråk för att istället användas till stadsodling.

Detta examensarbete handlar om precis stadsodling och mer specifikt, stadsodling i den kinesiska staden Xi'an, i den västra provinsen Shaanxi.

Syfte och frågeställning

Syftet med denna masteruppsats var att utvärdera den nuvarande situationen rörande stadsodling i Xi'an och dess plats i stadens grönstruktur, genom att analysera stadsodlingens konsekvenser och möjligheter. Vidare syftade denna studie till att

bestämma riktlinjer för design som kan stödja en miljövänlig och kulturellt fördelaktig praxis av stadsodling för livsmedelsproduktion i Xi'an. Frågeställningarna som arbetet centrerats kring är:

- 1. Vilka effekter kan stadsodling ha som en del av Xi'ans grönstruktur och vilka möjligheter finns för stadsodling som en del av Xi'ans grönstruktur?*
- 2. Hur kan ett miljömässigt och kulturellt fördelaktigt bruk av stadsodling för livsmedelsproduktion i Xi'an stödjas?*

Dessa frågor resulterade dessutom i en rad andra frågeställningar som berör Kinas och Xi'ans historiska relation till jordbruket, den nuvarande relationen till jordbruket och till den stadsodling som redan finns samt, huruvida, det finns potentiella visioner om hur framtida stadsodling kan se ut i Xi'an.

Metod

De metoder som användes för att besvara frågeställningen var litteraturstudier, kartstudier, platsbesök, intervjuer och fältstudier. Dessa metoder var dessutom uppdelade i underkategorier. Litteraturstudien består av Bakgrund och Teori. I



Rester från ruralt jordbruk som transformeras till urbant när omgivningarna utvecklas.



Småskalig stadsodling i centrala Xi'an

bakgrunden undersöktes Kinas och Xi'an historia med betoning på jordbruk, markanvändning och för Xi'an, specifika kulturella omständigheter. I Teori undersöktes konflikter mellan dekorativ och produktiv markanvändning i Kina samt teori om stadsodling och hur stadsodling bör utformas i staden. I kartstudierna undersöktes Xi'ans infrastruktur och grönstruktur översiktligt. Platsbesöken bidrog till en jämförande studie mellan Kinas historiska trädgårdar, som främst har dekorativa värden, och den nutida landskapsarkitekten Kongjian Yus parker med övergripande betoning på nytta. Dessutom bidrog platsbesöken med kunskap om befintlig stadsodling i Xi'an. De intervjuer som genomfördes gav insikt om hur akademiker och företagare inom landskapsarkitektur och/eller stadsodling tänker om relationen mellan stad och land samt om stadsodling i Xi'an. Dessutom genomfördes intervjuer med invånare i bostadsområdet Chang le i Xi'an där omfattande stadsodling praktiseras. Detta bostadsområde valdes dessutom ut för implementering av design principer och blev därför ytterligare inventerat genom fältstudier. Området undersöktes genom inventering av fysiska strukturer, stadsodling och vegetation. Dessutom genomfördes observationer av bostadsområdets gemensamma park som implementeringen av design principerna blev begränsat till. Observationerna undersökte platsens klimat, lukt och ljud samt människors aktiviteter. Genom arbetets gång dokumenterades data skriftligen, genom fotografi och inspelningar.

Uppsatsen har genomgående behandlat två huvudområden: Nutida Kinas kulturella kopplingar till jordbruket samt urban markanvändning och stadsodling. Denna sammanfattning utgår framöver från dessa två ämnen.

Jordbruk i Kina och Xi'an

Jordbruk betraktas som grunden för den kinesiska kulturen och har påverkat allt från ekonomi, till filosofi, sociala strukturer och till och med familjeliv. Under feodalsystemet var det kinesiska jordbruket uppbyggt med familjer som de huvudsakliga byggstenarna, något som resulterade i en särskild familjebaserad samhällsstruktur, allt eftersom jordbruket förändrats har även dessa strukturer gjord det. Till följd av den pågående urbaniseringen försvinner stora arealer av jordbruksmark vilket

påverkar många bönder negativt. Denna förändring av markanvändning pågår också i Xi'an. Det är möjligt att den extensiva stadsodling som går att hitta i staden kan härledas till människors personliga kopplingar till jordbruket och en vilja att behålla delar av ett förgånget liv. Idag finns det dessutom en pågående trend där Xi'ans invånare längtar bort från staden och den stress och de föroreningar som staden delvis förknippas med. Under intervjuerna som genomfördes i bostadsområdet Change le hade alla stadsodlingsintresserade respondenter personliga kopplingar till jordbruk. Antingen genom att deras föräldrar eller mor- eller farföräldrar varit jordbrukare. I flera fall hade till och med den intervjuade själv varit jordbrukare. Många ansåg sig fortfarande ha god koppling till landsbygden och jordbruket. Jordbruket fastställdes av flertalet respondenter som grundläggande och essentiellt. Vidare menades dock att jordbrukets status hade försämrats på senare tid på grund av dåliga möjligheter att försörja sig som jordbrukare samt att jordbruket kontinuerligt får ta mindre fysisk plats.

Urban markanvändning och stadsodling

Istället för att beklä ytor i kinesiska städer med gräsmattor som saknar kulturellt sammanhang och påverkar miljön negativt, kan dessa ytor, där det finns intresse, användas till odling. På så vis kan den urbana markanvändningen effektiviseras samtidigt som människor som vill ta med sig en bit från ett agrikulturellt förflutet, tillåts göra det. Det är dock viktigt att poängtera att även stadsodling kan få många negativa följder, vissa som är gemensamma med de av gräsmattor. Dessutom saknas mycket kunskap om stadsodling och dess inverkan på miljön vilken innebär svårigheter när stadsodling ska realiseras i praktiken. De akademiker och företagare som intervjuades angående stadsodling i Xi'an var dock överens om att stadsodling har en viktig del i framtida Xi'an men föreslog olika metoder för att nå dit. Att stadsodling bör kombineras med andra funktioner, bland annat rekreativa, rådde det dock konsensus om. Även en klar majoritet av respondenterna i bostadsområdet Chang le ansåg att den befintliga stadsodlingen i området var positiv. Det var dock vanligt att respondenten

underströk att det är viktigt att odlingarna hålls prydliga och att de inte expanderar ytterligare på de offentliga ytorna. Av flertalet respondenter framhölls det att på de offentliga ytorna ska det vara grönska, inte odlingar. Många uteslöt därmed de ätbara odlingarna från konceptet grönska. Att odlingarna var en form av privatisering av offentlig plats nämndes också som ett problem. Det råder ingen tvekan om att stadsodling kan innebära privatisering av mark men det finns exempel på offentliga platser som utformats med produktiva grödor men utan att för den delen kompromissa platsens rekreativa värden eller offentlighet. På samma sätt kan stadsodling förse människor med mat men även sjukdomar och ohälsa. Stadsodling kan vara både miljövänligt och skadligt för miljön samtidigt som det kan skapa gemenskap i ett samhälle men det kan också skapa konflikter. Det är denna problematik som ligger till grund för de riktlinjer för design som detta arbete resulterat i.

Diskussion

Denna uppsats har dels resulterat i en slutsats att många viktiga frågor kvarstår som obesvarade vad

gäller stadsodling i Xi'an och att dessa frågor bör besvaras innan planerade stadsodlings initiativ genomförs i praktiken. Utöver detta har ett antal riktlinjer utformats för utveckling av stadsodling i ett område. De viktigaste riktlinjerna är de som understryker vikten av att förankra och inkludera utformningen av stadsodlingen i det specifika samhälle som berörs. Med det sagt kan det i vissa fall vara nödvändigt eller fördelaktigt att frånga eller utveckla vissa riktlinjer. Stora delar av de riktlinjer som utvecklats i denna uppsats är förankrade i vissa social och ekonomiska kontext som inte är relevanta eller applicerbara i andra sammanhang. Dessutom är bostadsområdet Chang le, som varit viktigt för fastställandet av dessa riktlinjer, ett större bostadsområde än det genomsnittliga bostadsområdet i Xi'an och ligger dessutom i en yttre del av staden. Det är möjligt att dessa faktorer påverkar de boendes attityder gentemot stadsodling och landsbygd på ett sätt som inte är representativt för Xi'an. Än dock är förhoppningen att riktlinjerna, en dag i framtiden när de kompletterats med ytterligare nödvändig information, ska kunna bidra med inspiration och fungera vägledande vid utveckling av stadsodling i Xi'an.



Stadsodling i Chang le.



Sliten gräsmatta i Chang les kvarterspark.

DEFINITIONS

Below, definitions of important terms used in the thesis are listed.

Biodiversity: A concept used to explain the diversity of spatially limited ecosystems, on three levels. These levels are: the genetical diversity within species within the ecosystem, the richness of the number of species within the ecosystem and the diversity of communities within the ecosystem. Communities refer to a number of interacting species occurring together at the same time and place (Cain et al 2014).

Community garden: In this thesis community garden refers to a productive garden existing within an enclosed and semi-private area of multifamily housing.

Cultural identity: When referring to cultural identity in this thesis it is the definition of Oxford Reference (2017) being used. They explain the term as:

...groups or individuals (by themselves or others) in terms of cultural or subcultural categories (including ethnicity, nationality, language, religion, and gender). In stereotyping, this is framed in terms of difference or otherness.

– Oxford references (2017)

Cultural Sustainability: The definition of cultural sustainability by the research association The Circles Project (no date^{1,2}) and the United Nations Educational, Scientific and Cultural Organization (UNESCO no date) is used in this thesis. They mean that cultural sustainability is an essential part of sustainable development, integrated in both environment and economy and is furthermore fundamental for social life. UNESCO (no date) means that promoting cultural diversity is a key issue of sustainable development and includes both cultural heritage as well as cultural and creative industries. The Circles Project (no date³) explains the word culture as inclusive of the listed categories, in this thesis regarded as equally important for

cultural sustainability.

1. *Identity and Engagement* inclusive of: diversity, belonging, ethnicity, religion and home.
2. *Creativity and Recreation* inclusive of: aesthetics, performance, innovation, celebrations and leisure.
3. *Memory and Projection* inclusive of: tradition, heritage, imagination and inspiration.
4. *Beliefs and Ideas* inclusive of: knowledge, ideologies, reason, spirituality and emotions.
5. *Gender and Generations* inclusive of: equality, respect, sexuality, family, birth, childhood, mortality and care.
6. *Enquiry and Learning* inclusive of: curiosity, deliberation, research, teaching and meditation.
7. *Wellbeing and Health* inclusive of: integrity, corporeal knowledge, mental health, care, inclusion cuisine and emotional nourishment.

In addition, the Circle Project (no date³) means that all categories include an aspect of monitoring and reflection.

East/Eastern: In this thesis, the words East and Eastern are, if nothing else is noted in the text, used as collective terms for the countries that were cooperating politically, economically and military between the years 1945 and 1990 with among others Soviet Union. The international relationships were, during this time, dominated by the East-West conflict. China had close cooperation with Soviet Union during this time (NE. no date¹; Lundahl. no date) and is therefore included in these terms.

Green infrastructure: The definition of green infrastructure used in this thesis is the definition by European Union, the European Commission (2013). Accordingly, green infrastructure is a network of natural and semi-natural areas being strategically planned. Furthermore, it includes green spaces (In this thesis green spaces includes all surfaces covered in vegetation regardless of ecological quality), possibly blue spaces if aquatic ecosystems are concerned and additionally, it may also include environmental features designed as well as managed

to favour biodiversity.

Sustainable development: In the report *Our Common Future*, The World Commission on Environment and Development (WCED 1987), on the request of United Nations (UN), defines *sustainable development* as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. WCED (1987) clarifies that “needs” refers to the essential needs of the world’s poor which should be given priority meanwhile limitations should be imposed on the environments ability to meet the needs of today as well as future needs. Furthermore, The UN (2011) divides sustainable development into three parts, economic sustainability, social sustainability and environmental sustainability of which it must be balance for sustainable development to be realised. UNESCO (no date) also mentions culture as an essential part of sustainable development as it is what shapes our identity. In this thesis, special emphasis is put on the cultural and environmental aspect of sustainable development.

Environmental sustainability: In the article *Environmental Sustainability: A definition for Environmental Professionals*, Morelli (2011) explains that environmental sustainability is a subset to ecological sustainability. Ecological sustainability concerns more than just the human experience, the word “environment”, however, is deeply connected to human interaction with the ecosystem. Morelli (2011) means that the concept of environmental sustainability can be seen as a deepening of the general definition of sustainable development made in “Our Common Future” (See: *Sustainable development*). Morelli (2011) specifies environmental sustainability in the following quote:

...a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity.

- Morelli (2011)

This quote includes the simple definition of sustainable development determined in *Our Common Future*. However, it also clarifies that it is by carefully and non-destructively managing our usage and consumption of the ecosystems that environmental sustainability can be achieved.

Urban agriculture (UA):

An industry located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, which grows and raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area.

- Mougeot 2000

In this thesis, the definition of UA by Mougeot (2001) stated above is used as a based but further specified. In this thesis only intra-urban agriculture is treated. Furthermore, UA only refers to edible cultivations practiced by the use of traditional methods of cultivation in soil. It does not include UA as a product of new technology such as hydroponics and aeroponics. UA is furthermore not limited to its extent but includes small scale cultivations in potted plants to larger fields of crops (Under *Delimitations* more is explained about which kind of UA this thesis treats).

Urban area: Chandan Deuskar (2015) notes that there are no coherent definitions of *urban* through out the world and that the UN Population Division summarizes the national numbers of urban population based on each national definition of *urban*. Therefore, when discussing urban areas in this thesis, it refers to the simple definition determined by National Geographic (Rutledge et al. 2011) as a town, a suburb, a city or a highly-developed area surrounding a city. Highly developed means that it has got a high density of people and human structures, for instance houses, roads, commercial buildings, and railways. To further clarify *urban* in this thesis, an area of interest was chosen, based on the extensions of the main subway lines in Xi'an (See: Methodology)

Urbanization: The process where an increasing amount of people are moving from the countryside to urban areas (Svanström 2015).

Westernization: A process of western style development where non-western societies adopt western culture and elements from western culture, in China due to attract western investors (Yu & Padua 2006; Yu 2007).

West/Western: In this thesis, the words *west* and *western* is, if nothing else is noted in the text, used as collective terms for the countries that where cooperating politically, economically and military with among others, United States of America, Great Britain and France, between the years 1945 and 1990. At this time, the international relationships were dominated by the East-West conflict (NE. no date2).

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INTRODUCTION

The introduction consists of a presentation of the problem this thesis responds to, purpose of the thesis, research questions, method and a background.

THEORY

FIELD STUDY

RESULTS

According to the United Nations Population Fund (UNFPA 2015), more than half of the world's population is living in urban areas meanwhile the trend of urbanization is predicted to continue in rapid speed, especially in Africa and Asia. UNFPA (2015) claims this development to give rise to economic growth meanwhile cities are a tool of empowerment and have possibilities for social mobilization, good educational systems and health care that may not be available in most rural areas. However, UNFPA (2015) underlines the relationship between cities, concentrated poverty and inequality and means that cities are dualistic as wealth often rests alongside extreme poverty with an intensity rarely seen elsewhere. Despite this, UNFPA (2015) means that provided the process of urbanization can be guided in the right direction, urban living can lead to an effective use of resources, sustainable land use and ultimately a protection of biodiversity and ecosystems.

In absolute numbers, China has got the world's largest urban population of 758 million people, a number that is expected to increase to 1 billion by 2030 (Li 2015). Meanwhile, China is experiencing major economic expansion. The World Bank (2016) presents China's GDP growth as the fastest sustained expansion by a major economy with an average growth of nearly 10 % per year since the market reforms were initiated in 1978. However, even though this growth has substantially decreased poverty, the World Bank (2016) means that the income per capita is still very low and just a fraction of that of already developed countries.

Li (2015) discusses China's massive urbanization and its general failure of effective land use. She formulates the problem in the following quote:

China is already home to the world's largest urban population of 758 million, which is predicted to reach 1 billion by 2030. With an average of 15 million Chinese rural farmers becoming urban residents every year, there is no question that urban areas in China will continue to feed what may seem to be an insatiable appetite for land.

- Judy Li (2015)

In this quote, Li expresses worries that the extreme exploitation of land in China today is a continuous trend, due to the massive urbanization. The urbanization is however, not only massive but also, as mentioned, very inefficient. The process is characterized by urban sprawl which is effecting not only biodiversity and urban carbon emission negatively, but is also resulting in a huge loss of arable land.

Recently, the trade and cooperation between China and African countries have increased, partly because China wants to ensure that African countries can produce food for the growing Chinese population. In Ethiopia for instance, China provides with funds for development meanwhile, in return, getting duty free imports of agricultural products (Bangura 2007; Globalis 2015). China has even been accused of "land grabbing" after the government of the Democratic Republic of Congo leased thousands of unutilized hectares of agricultural land to a Chinese company, ZTE International (Ighobor 2013).

Kongjian Yu suggests that the decline of agricultural lands in China and the loss of traditional skills in agricultural cultivation and stewardship are reasons for the ongoing processes of globalization, urbanization and the spread of materialism (Yu & Padua 2006). Concerning materialism, the

Poor area in Xi'an neighbouring contrasting institutions.

traditional Chinese way is to view natural elements as sacred and inhabited by spirits, however, now, the landscape is commercialised and instead of spirits, it is overpowered by real estate developers. Even though the development has provided China with a high GDP growth rate, it is suggested that this growth may be a cause of various natural disasters and disorders, such as desertification and floods. The environmental and ecological degradation are, furthermore, estimated to a loss equally large, or possibly larger, than the annual GDP growth (Yu & Padua 2006). However, by using landscape design as a medium, Yu has tried to reconnect with the agricultural history of China. The rice campus of Shenyang Jianzhu university is one example where he combines agricultural food production with an urban contemporary park (Saunders 2012).

UA in China is however not a new phenomenon or limited to the work of successful landscape architects. Ignatieva et al (2015) explains that it is quite common for urban communities in China to have intended UA within the neighbourhoods. Even in neighbourhoods built in a western manner with non-productive elements such as lawns, people have in some cases, turned these neighbourhood lawns into community gardens.

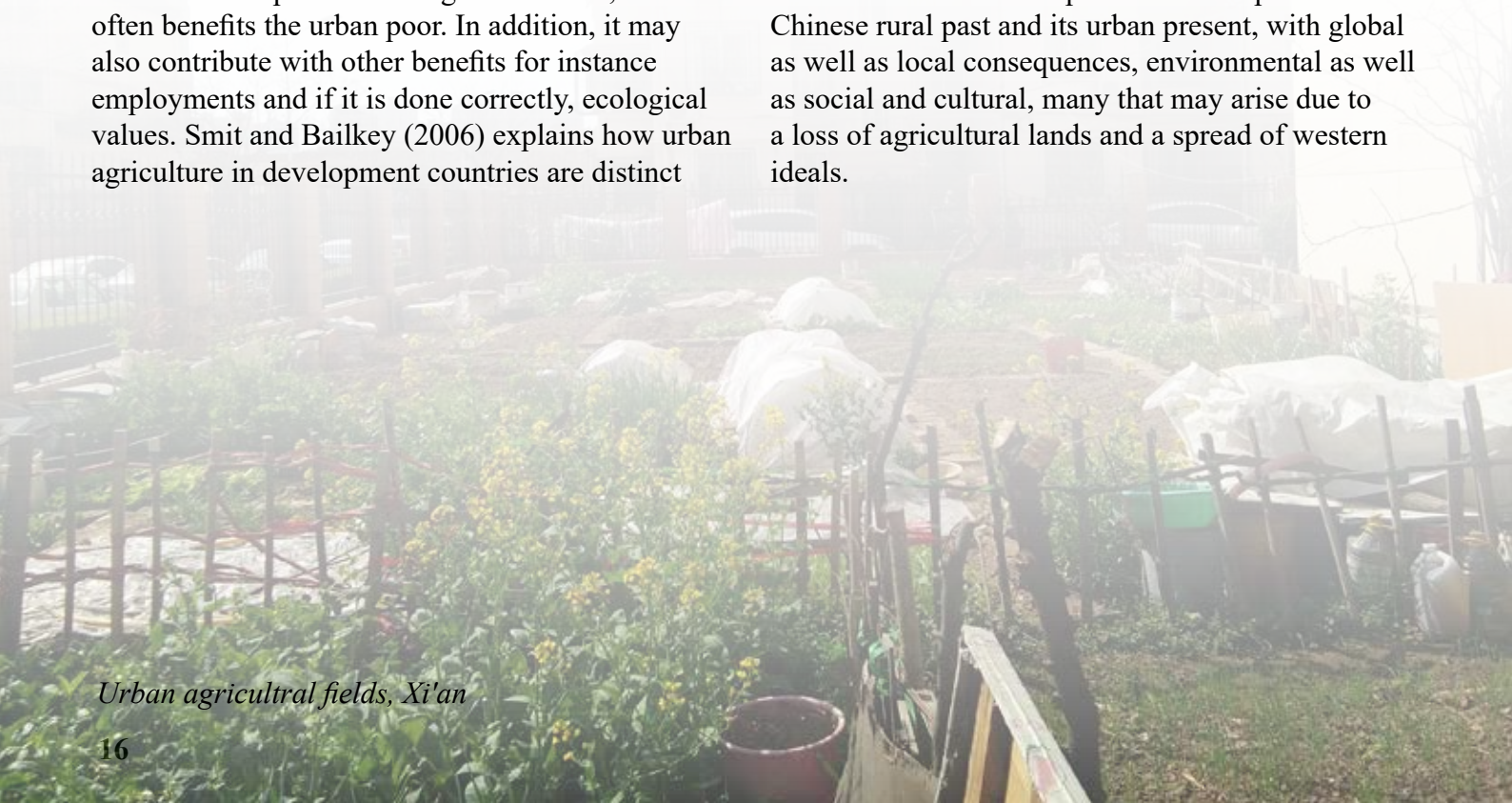
De Bon et al (2008) claims that by providing food, above all perishable fruits and vegetables, directly as self-consumption or through the market, UA often benefits the urban poor. In addition, it may also contribute with other benefits for instance employments and if it is done correctly, ecological values. Smit and Bailkey (2006) explains how urban agriculture in development countries are distinct

from already developed countries. In the latter, the products of UA are a desirable supplement to the global corporate food network. In the former, it is an important source of food for the people being excluded, because of lack of income, from the global food market. Furthermore, Smit and Bailkey (2006) explains that food and agriculture is cross cultural and can therefore function as an element of social and cultural inclusion in the city.

However, despite many potential benefits UA also have potential downsides. Some of these downsides concerns health risks and environmental implications due to for instance polluted water, a threatening of water sources through irrigation and an intensive use of pesticides and fertilizers (Stewart et al 2013). Furthermore, it may also have social implications by resulting in conflicts of land-use (Mubvami and Mushamba 2006).

An earlier Minor Field Study in Xi'an conducted by Linda Johansson and Victoria Smårs (2015) concluded that the green infrastructure in Xi'an is insufficient, fragmented and in many cases, consists of homogenized western style green areas. Thus, its quality should be enhanced. This thesis explores if UA can be used as a part of the improvement of the green infrastructure in Xi'an.

Finally, the subject of this thesis was chosen due to an interest of the complex relationship of the Chinese rural past and its urban present, with global as well as local consequences, environmental as well as social and cultural, many that may arise due to a loss of agricultural lands and a spread of western ideals.



Urban agricultural fields, Xi'an

PURPOSE

The aim is to assess the existing situation concerning UA in Xi'an and its place in the city's green infrastructure by analysing the UA effects and potentials. Furthermore, this thesis aims to determine some design principles, which could support environmentally and culturally beneficial practice of UA for food production in Xi'an.

RESEARCH QUESTIONS

What effects and potentials can UA pose as a part of Xi'an's green infrastructure?

How can environmentally and culturally beneficial practice of UA for food production in Xi'an be supported?

In order to answer the research questions a number of sub questions emerged. First the history of the agriculture in China and Xi'an had to be understood. Are there any connections between China's agricultural history (Jin 2007) and the way the urban population in China, or more specifically Xi'an, live today? This question was especially interesting when UA practice was a part of the urban resident's life. Why did some people choose to practice agriculture in the city? Since it was already known that China is experiencing a massive urbanisation process (Li 2015), questions concerning the urbanisation arose such as what the attitudes are towards the urbanisation process amongst the urban residents of Xi'an and whether it is causing an experience of a separation from the countryside. Furthermore, questions exploring the potential of UA in Xi'an also became relevant. These questions concerned the Xi'an resident's perception of urban agriculture, what interest and opinions do they have concerning the practice of UA in Xi'an? The questions also concerned local professionals within fields connected to land-use and their opinions of UA, its place in the urban green infrastructure and whether they have a personal vision of what good UA can look like in Xi'an. It was also interesting to explore limitations concerning UA in Xi'an, both through the perspectives of the urban residents and through the perspectives of relevant professionals.

DELIMITATIONS

This thesis concern agriculture in urban areas and its extensions. Agriculture is limited to agricultural production of food. Other agricultural products are not treated within this thesis. Livestock is not investigated but only the production of edible crops. Additionally, the investigation was geographically limited to the urban area of Xi'an and does not treat agriculture taking place in the borders between the urban and rural areas. Therefore, this thesis does not focus on agricultural lands as left-overs in areas undergoing urbanization but instead treats agricultural practice that has risen in already established urban areas. It is also limited to only treat low tech UA such as small-scale cultivation in soil. High tech UA for instance vertical UA using new technology such as hydroponics and aeroponics is not treated in this thesis additionally to being mentioned in interviews. Furthermore, this thesis was limited to the ground level and to public roof gardens. Private balcony gardening was not investigated in this master thesis.

The thesis is geographically limited to the city Xi'an. The west and north parts of China, where Xi'an is included, differ a lot both physically and culturally with the east and southern parts of China (Jin 2007). However, projects in other parts of China is used as reference projects and inspiration. Additionally, since there was a shortage of English literature to be found about UA in Xi'an, theory concerning the whole of China and even UA in general in the world, was used to gather enough information. However, the theory was selected to be relevant for UA in Xi'an with consideration to the physical aspects of Xi'an and the economic and cultural aspects of China. Related issues such as biodiversity, urbanization and westernization was studied in direct relevance to UA.

To ensure urbanity an area of interest was defined by using the extensions of the main subway lines (1 and 2) in Xi'an. Further analysis of establishment and management of UA was done in an average sized neighbourhood; meanwhile the design proposal is offered of only a part of that neighbourhood in a fine and detailed scale.

Furthermore, a general historical overview of

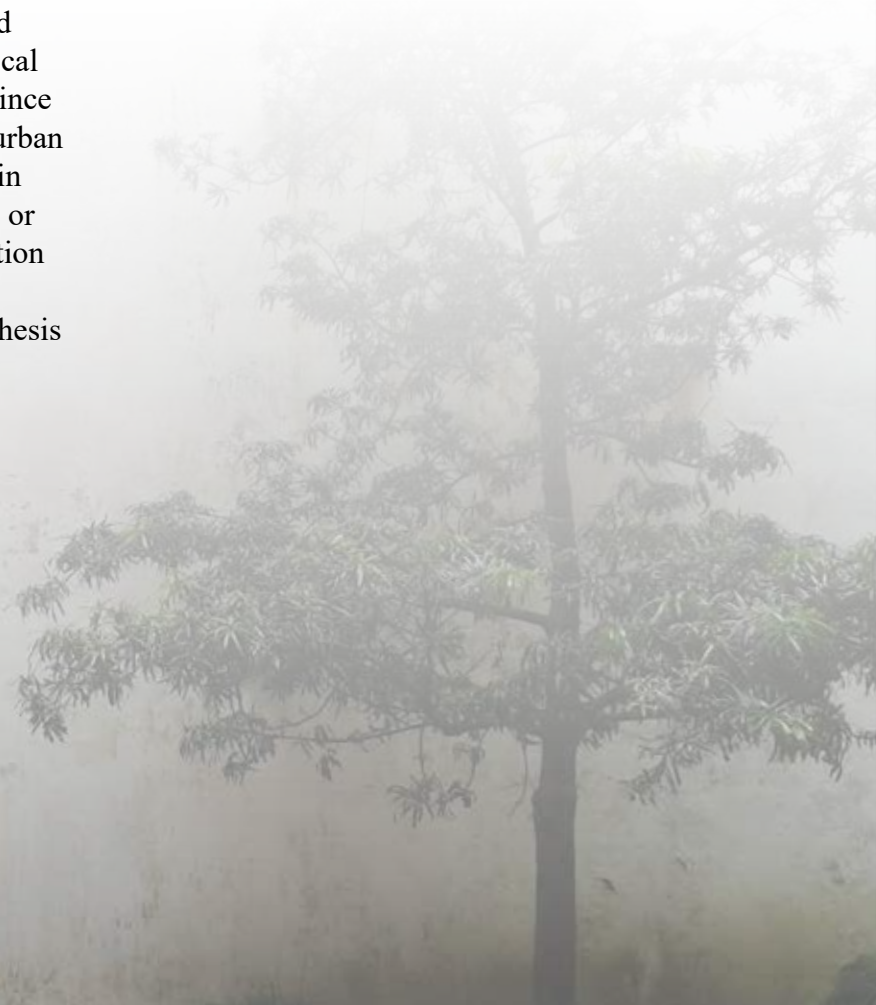
agricultural China was researched and used while analysing the development of UA in Xi'an. Because agriculture is an important component of Chinese history with great relevance for the Chinese culture today (Jin 2007), this thesis presents Chinese history related to agriculture dating back a couple of hundred years BC. However, focus is on the modern history of China, starting with the First Opium War (1839–42) (Jin 2007).

When addressing issues concerning UA, only solutions based on landscape design or design processes are treated.

Yang (2017) states that it can be a challenge to select suitable native plant species in China due to a long-term transformation of the landscape and exchange of species. Meanwhile Lin et al (2015) means that urban agroecosystems have only recently been documented and require synthesis. For these reasons, ecologically suitable plant species are not specified in this thesis. However, examples were used to illustrate volumes in a conceptual design.

TARGET GROUP

Except for other landscape architect students and landscape architects, this paper is relevant for local municipalities and stakeholders in Shaanxi province in China. Furthermore, it can be interesting for urban planners and anyone interested in food security in the future (for instance environmental engineers or social scientists). People concerned by the adoption of western culture by non-western societies, for instance human geographers, can also find this thesis interesting.



METHODOLOGY

In this section, the methods used in this thesis are presented.

LITERATURE STUDY

The literature study was divided into two parts, a background study aiming to provide with necessary background knowledge of China and Xi'an and a theory-part aiming to provide with necessary information on land-use and urban agriculture.

Material for the literature study was found in a multitude of books regarding Chinese history. Sources from institutions of the United Nations were also used to understand contemporary issues of the country. Concerning UA, urban land-use, landscape architecture and gardening in China, most relevant sources were found in publications online but a few books were also used. Furthermore, most online publications were found through the search engines Google, Google scholar, Epsilon and Libris. Keywords used to find material were Agriculture, China, Food Security, Green Infrastructure, History, Identity, Land-use, Urban, Urbanization and Xi'an. Information was searched for in both English and Swedish but most of the relevant sources were written in English.

Background Study

To understand China and Xi'an, the history of the country respectively the city had to be investigated. Emphasis was put on the history connected to agriculture, land-use and special cultural conditions.

Study of Theory

A literature study was made focusing only on issues concerning urban land-use in China and UA, this literature study also was divided into two parts.

The first part of the study of theory was a further investigation of the land use inefficiency in China (Li 2015). However, the focus of this study was specifically on urban land-use and the conflicting interests of an ornamental urban landscape and a productive one. The intention of investigating this was to understand which forces are driving the development of urban public space and to which directions. Included in the first part of the literature study is a presentation of the classical gardens of China, representing the ornamental. A presentation of the opposing ideas of Kongjian Yu, Doctor of Design at Harvard University and the founder of the prominent Chinese, multidisciplinary design firm Turenscape (Turenscape, no date), is also included and acts as an equipoise while representing the productive. The first part of the literature study contributed to *Design Principles: Part 1* (see *Comparative Study of the Classical Gardens and the Parks by Kongjian Yu*) and *Part 2*.

The second part of the study addresses UA in practice, which benefits it has got and how to seize them and which difficulties it has got and how to avoid or address them. Whether, and in that case how, UA can be implemented in public space in a sustainable way is the main issue to be answered in this section. The result of this part of the literature study contributed to *Design principles: Part 2* by



Figure 1. A simplified model of the process of writing this thesis.

reformulating all issues found concerning the UA this thesis is limited to, into design principles.

STUDIES OF MAPS

Maps were studied to detect the overall structures of Xi'an, the disposition of its functions and its green infrastructure. The result of the map study was a general zoning map, covering the major functions of the area of interest. This map was furthermore complimented by my own observations during the field study. The green infrastructure was also presented in a map. Additionally, maps were used as a help when defining the area of interest. Aiming to ensure urbanity, the area of interest was defined by using an imaginary frame created by the end stations of the main subway lines, 1 & 2, leaping in an east-west respectively a north-south direction through Xi'an city.

The studies of maps were large scale investigations aiming for generalised information rather than details. *Map 1.* shows the scale of the investigation and the area of interest.

The studied maps were maps from Google Maps (Source: <https://www.google.se/maps>) and Baidu Maps (Source: <http://map.baidu.com/>).



SITE VISITS

Site visits were made to understand the history and contemporary culture of Chinese agriculture and gardening and the UA taking place in Xi'an. The site visits are described below.



Map 2. Visited cities.

Comparative Study of the Classical Gardens and the Parks by Kongjian Yu

The literature study partly consists of a presentation of the classical gardens of China, the product of an art often regarded as a tradition of national identity (Yu & Padua 2006). It also consists of a presentation of the ideas of landscape architect Kongjian Yu, connecting the ornamental and contemporary urban development in China to the culture behind the classical gardens as well as the westernization process today. Yu criticises this ornamental focus and instead promotes a more productive approach when developing cities (Yu 2009; Bergaust & Jørgensen 2013; Yu & Padua 2007). However, Yu (Bergaust & Jørgensen 2013) also admits that there are lessons to be learned from the classical gardens regarding dimensions, space and colour.

In this work, the classical gardens and the Parks of Kongjian Yu both represents two opposite forces of Chinese design. For this reason and as a means to facilitate the making of a design in a foreign culture, a comparative study was made to find aesthetical similarities between the parks of Kongjian Yu and the classical gardens. The aesthetical similarities found were then remade into the *Design principles: Part 1.*

The comparative study was made partly by studying the Chinese architect Liu Tuo's determination of typical features of the classical gardens. Liu is a research fellow and supervisor of PhD candidates

and has written several books treating architectural theory and history. He presents typical ways that space, light, water, different kinds of buildings and plants are used in the classical gardens (Liu 2012) (See pages 35-36 for more detailed descriptions). These physical features shape the base to the structure of the classical gardens (Liu 2012) and were therefore used as a basis when the comparative study was made, in order to find guidelines on how to shape a park in China. However, the study was continued through site visits. By visiting several classical gardens, the features determined by Liu (2012) were confirmed. Furthermore, visits were made to the parks of Kongjian Yu in order to find common denominators between these opposite forces of Chinese landscape design. When finding similar features in the visited parks of Kongjian Yu, this was noted and photographed. It was further presented by showing one photograph representing the features from one of the classical gardens and one photograph from each visited park of Kongjian Yu showing a similar feature, together with a written explanation. This was later summarized and reformulated into the Design Principles: Part 1.



Summer palace, Beijing



Sponge park, Xi'an

Seven classical gardens were visited to confirm the common elements determined by Liu (2012) The humble administrators garden (Suzhou), Lion Grove Garden (Suzhou), Lingering Garden (Suzhou), Garden of the master of the nets (Suzhou), Yuyuan Garden (Shanghai), Summer palace (Beijing), Gardens of the forbidden city (Beijing). Many of the classical gardens are located in close proximity with each other why, for practical reasons a higher number of Classical gardens could be visited than Parks of Kongjian Yu. Yu's parks are scattered over the country and due to limitations in time and finance, only three parks of Yu could be visited. Three was considered as the bare minimum of parks to visit in order to evaluate recurrent similarities with the Classical Gardens. The parks visited was

Sponge Park (Xi'an), Houtan Park (Shanghai) and The Red Ribbon Park (Qinhuangdao).

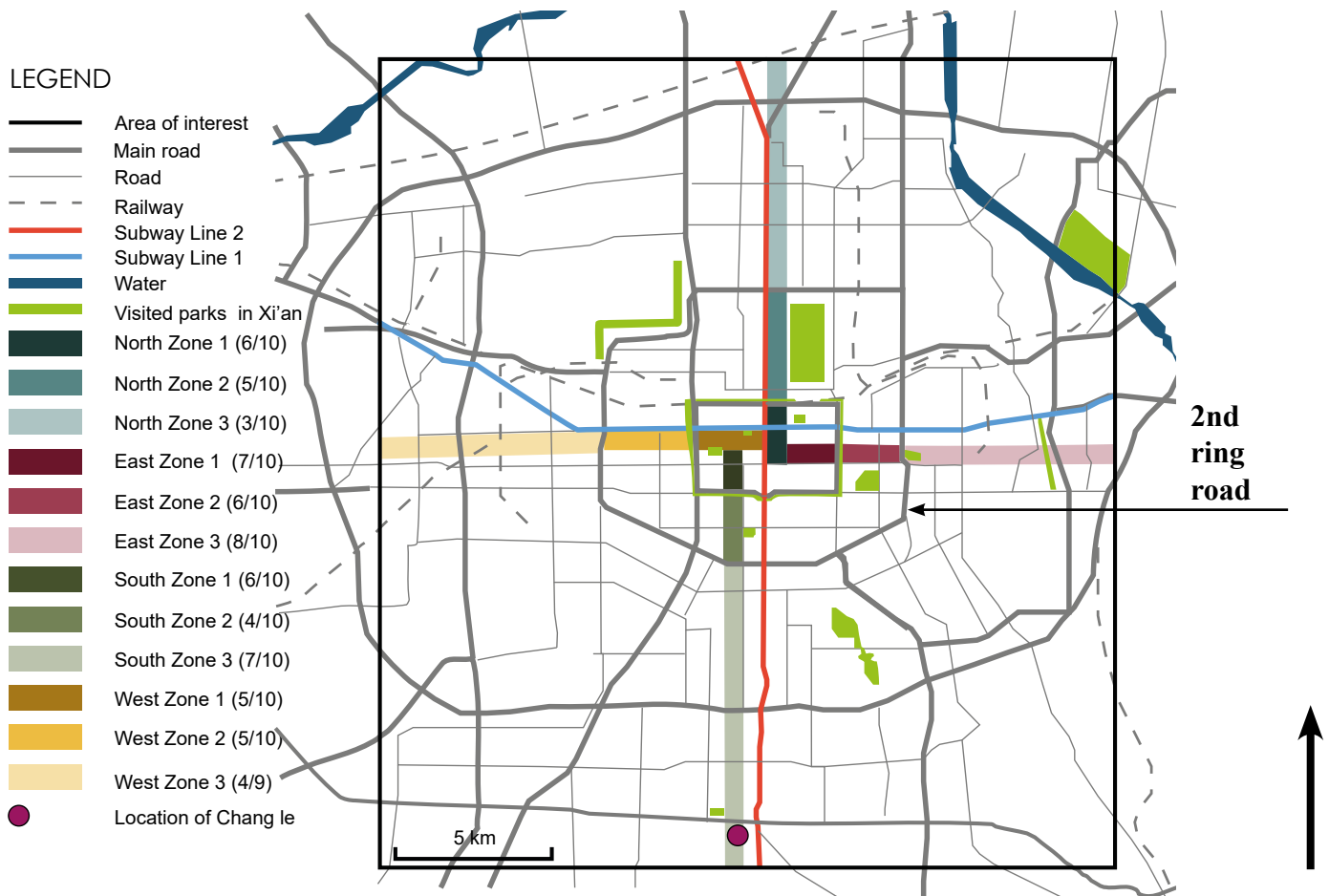
Cluster Sampling of Xi'an City

To get an overview over the city itself and the UA taking place inside, the city was inventoried. Because of time limitations, the whole city could not be inventoried. Instead it was cluster sampled within the area of interest. Cluster sampling is used when the area of interest is very large. It is a cost-efficient method of inventory (Khan 1998). To make a cluster sampling the large area is divided into smaller sections where sample units are selected (Khan 1998). This was made of the area of interest. Linear sections, below termed wedges, aiming to be as representative as possible under the given circumstances were chosen and later explored.

Four wedges from the centre of Xi'an towards each cardinal direction, north, east, south and west were inventoried. By exploring each cardinal direction, potential geographical differences were expected to be regarded. To take into consideration the different characters of the city's inner and outer areas, each wedge was furthermore, divided into three zones. Part 1 is the most central part within the city walls. Part 2 is between the city walls and the second ring road meanwhile part 3 runs from the second ring road all the way to the end of the area of interest (Map 3.). Each section was inventoried by walk, aiming to visit 10 communities within each zone, 30 communities in each wedge and in total 120 communities in all of Xi'an and thereafter determine the share of the visited communities where agricultural food production was taking place. 10 were considered as the maximum amount of communities possible to visit in each zone meanwhile it provided with a reasonable amount of data for the scope of this thesis.

Because the density of residential housing in Xi'an decreases considerably the further you come from the city centre, especially beyond the 2nd ring road, all of the third parts in the outskirts of the city are much longer than the first and the second parts. In zone 3 of the west wedge, only 9 communities possible to visit were found due to extensive industries and construction-sites throughout the wedge.

The communities were enclosed and clearly defined



Map 3. Wedges investigated for UA.

areas of housing. Sometimes the communities had internal gates creating small communities within the community. However, those internal communities are not taken into regard in this thesis but are reduced to simply a part of the large community. The visited communities were chosen at place, depending on the possibility to enter. Often the communities were locked and at times, the guards or the residents of the community did not want me to enter. In aiming to get a wider view of Xi'an, the chosen communities to explore were not neighbouring communities.

The purpose with this inventory was to confirm or to confute the assumption of an extensive interest for UA in Xi'an and furthermore, to gather examples of UA in Xi'an. Because this was a geographically limited cluster sampling which is not as accurate as other methods of inventory (Khan 1998) and considering the difficulties accessing certain neighbourhoods and communities (see: Discussion), the result of this inventory should not be interpreted as representative numbers for Xi'an but only as an indication of interest.

Except for noting the number of visited communities with agricultural practice, the type of practice was also noted and categorized depending on container. The categories are: In pots, in elevated plant beds, in forecourts and previous lawns. Additionally, the categories were sorted from most to least common. The extent and recurrence of different kinds of UA were not investigated further as, for this to be relevant in terms of interest of UA, it would have to be researched in relation to the possibility of practicing UA in each of the visited communities.

Edible plantations seen on public space outside the communities for instance by roadsides or left-over space were photo-documented during this inventory and presented in this thesis, however it was not included in the counting.

Public Parks in Xi'an

To determine whether any agricultural food production was taking place in the public parks of Xi'an city the largest parks were visited inside the city as well as smaller parks located within the chosen wedges of inventory throughout the city.

INTERVIEWS

Interviews were carried out to better understand Xi'an and its inhabitants. They were furthermore limited to the thematic of this thesis and the interest for complex processes such as urbanization and people's relationship to it made semi-structured and qualitative interviews, with questions based on the research questions considered most appropriate (Ekström & Larsson. 2010). Semi-structured and qualitative interviews were therefore chosen as the form of interview both with the professionals and with the residents of the Xi'an neighbourhood. The interviews therefore followed pre-made questionnaires with open questions (Ekström & Larsson 2010) and were prepared after the model of Ekström and Larsson (2010) who suggests having more general questions in the beginning and narrow them down through the interview.

Professionals

5 interviews were conducted with professionals within the field of landscape architecture and UA. The interviews with the professionals were aiming to investigate how professionals within the field of UA or landscape architecture view UA in Xi'an. Furthermore, they were also aiming to detect whether UA is common in Xi'an and in which forms it appears, if it is considered beneficial, how it can be planned in a good way and its background.

Three interviews were conducted with associate professors at the Northwest A&F University in Yangling. Furthermore, two interviews were conducted with the managers of the agricultural rooftop garden Kong Zhong Nong Chang. The contacts were found through snowball sampling, meaning that one contact leads to another contact which leads to another (Ekström & Larsson. 2010).

The interviewees are listed and presented below.

Associate Professor Dr. QIU Ling, experienced within the field of landscape architecture planning with two PhD's in Landscape Ecology, one completed at the Northwest A&F University in Yangling, China, and the other completed at the Swedish University of Agricultural Science in Alnarp, Sweden.

Associate Professor Dr. Yang Zhenchaos specialises on protected agriculture in science and engineering and has been involved in various agricultural projects not only in Shaanxi province but other parts of China as well. He is personally interested in UA and takes part in planning agricultural parks and the green houses within.

Associate Professor Dr. Zhang Yong has a master degree in landscape architecture and is now working specifically with green houses mostly in urban areas. He has been working with design of agricultural demonstration parks for about ten years, specifically with the design of greenhouses. He also grows potatoes himself.

Mrs. Zhang Juan, initiator, investor and general manager of the agricultural roof top garden Kong Zhong Nong Chang in Xi'an.

Mr. Sun Tao, co-manager of the roof top garden Kong Zhong Nong Chang in Xi'an with responsibility over the finance and the division of labour.

The interviews with the professionals were recorded and reproduced in writing. The full interviews, including questionnaires with the professionals can be found in *Appendix 1*. They were also summarized under the Chapter: Field Study. The interviews with the academics were processed into one and the same summary meanwhile the interviews with the managers of the rooftop garden were processed into another summary. An interpreter was used when interviewing the managers of the rooftop gardens.

Furthermore, all problems and concrete tips stated by the professionals, concerning the kind of UA this thesis is limited to, were remade into a contributing part to the *Design Principles: Part 2*.

Residents of Chang le

The neighbourhood Chang le was considered as an appropriate neighbourhood for continued studies of UA, due to its already extensive practice of UA on the previous neighbourhood lawns (Map 4). It was also chosen due to its urban location. It is located near the subway, malls, larger roads and other advanced infrastructure, thus ensuring urbanity (Map 5).

Twenty semi-structured interviews were made with anonymous residents of Chang le. The selection of interviewees was made randomly on site, depending on who was moving within the neighbourhood at the time and of them, who was interested in participating. The interviews had three aims. The first aim was to investigate the background and the reasons why people in Chang le choose to practice UA on their lawns. The second aim was to determine what interests and needs the agricultural practitioners consider themselves having regarding their agricultural practice. Meanwhile, the third aim was to determine difficulties and potential conflicts arising around the agricultural practice taking place in the neighbourhood to give basis for possible improvements.

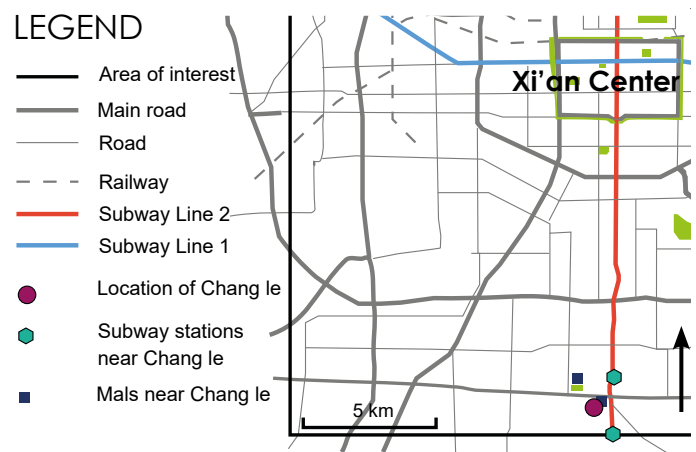
The interviews with the residents of Chang le were carried out with an interpreter. As the interviews with the professionals they were also recorded and reproduced in writing and can be found under Appendix 2. Furthermore, they were summarized under the Chapter: Field Study. All difficulties and conflicts expressed by the residents, concerning the agricultural practice in the neighbourhood, were used to formulate a contribution to the *Design Principles: Part 2*.

CASE STUDY

Four different field observations were carried out to better understand Chang le, the community park of Chang le and its users. These field observations are listed and described below.



Map 4. Chang le with the urban agriculture mapped



Map 5. Location of Chang le in relation to Xi'an center, nearby malls and subway stations.

Analysis of Lynch's Five Elements

To compliment the information gathered focusing on the usage of the site and the user's opinions of it, the physical form of Chang le were inventoried and mapped by making an Analysis of Lynch's Five Elements. The purpose of making this analysis is the same as Lynch (1960) himself explains, to be able to use form as a way to reinforce meaning and not to negate it. By understanding Chang le from this point of view, the first stage of deciding the place for the implementation of design principles was set, in the community park. This was later further specified to a smaller area of the community park, through the *Observations of Activities and physical Conditions*. The analysis was carried through by, at site,

trying to detect the five physical elements in the neighbourhood and documenting the conclusions in a map. However, Lynch's description of this analysis is in relation to a city, here his method is implemented on the scale of a neighbourhood. Considering the method is implemented in a far less complex context (Neighbourhood scale) than what it is purposing for (City scale), it should not result in any sources of errors. Below is a summary of Lynch's (1960) definition of these elements.

Paths: Paths are the channels where people may move, for instance streets and walkways. They are furthermore, from where a site is generally observed. Along the paths, other elements are arranged (Lynch 1960).

Edges: Edges are linear elements between regions functioning as the borderlines. They may either be barriers or seams but are not used as paths by the observer. Barriers are borders which, more or less, closes off districts from each other. Seams on the other hand are borders that integrate two regions with each other (Lynch 1960).

Districts: Districts are two dimensional sections. Each district has a common identifying character. They are often observed from the inside but may also be used as an exterior reference providing it is visible from the outside (Lynch 1960).

Nodes: Nodes are strategic points in the city where the observer can enter. It is an intense centre where people move through or linger within. Examples of nodes are crossings, places of break in transportation, a square or a street-corner hangout (Lynch 1960).

Landmarks: Landmarks are also a point-reference but one the observer generally experiences from the outside. Usually a landmark consists of a simple element such as a building, a sign or a mountain. They may either be within the area and used as radial references or outside the area, used as a constant indicator of direction (Lynch 1960).

Inventory of the Agricultural Plantations

The agricultural plantations in Chang le were

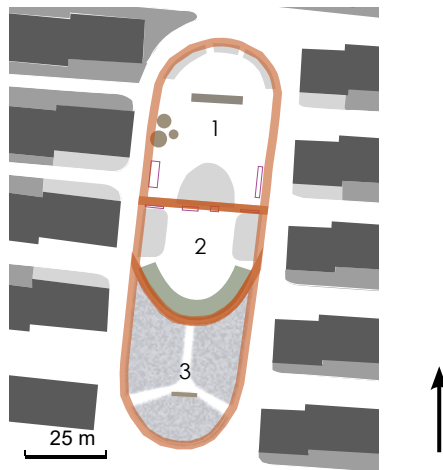
inventoried through mapping and photography at site. A map of the community was first printed from Baidu Maps (Source: <http://map.baidu.com/>) and thereafter the whole community was searched through by foot. Edible greenery was marked in one colour on the printed map, meanwhile non-productive greenery was marked with a different colour. Different agricultural plants were furthermore identified and photographed. This inventory was carried out to get an overview of the extent of the agricultural practice in the neighbourhood as well as where it is located and which agricultural plants are popular amongst the practitioners (Map 4.).

Observations of Activities and Physical Conditions

To compliment the interviews with the residents of Chang le as well as other field observations, observations of the activities and physical conditions were done in the community park. The park in Chang le was chosen for the implementation of the Design Principles as a result of the Lynch analysis. The park was concluded to be the only node, containing the only landmark within the neighbourhood and was for this reason the most public space within an otherwise enclosed and private neighbourhood. By choosing the community park for the implementations of the Design Principles it was possible to show how productive plantations can be used in a public park as part of the green infrastructure. Furthermore, the community park contains large areas hardly being used and has good light conditions making it suitable for agricultural practice.

The park was too big to be able to be observed all at the same time whereby the observations had to be geographically divided into three parts. The park already consists of three clear sections which was used when dividing the park for the observations (Map 6). Each part was observed independently of the others. As a result of the observations of the activities and physical conditions, the area for the implementation of design principles was further limited to one of these parts.

To understand the dynamic conditions of the park



Map 6. Chang le community park and its three parts.

it had to be visited at several occasions. Therefore, observations were made at the three parts of the park, for 30 minutes at each part, 4 times/day, morning (8-9.30), noon (10.30-12), afternoon (13.30-15) and evening (16.30-18), one weekday and one weekend-day. The observations were divided into two parts, however carried out at the same time. The first part was to observe the human activities at the place. Ekström and Larsson (2010) explains that interviews may not be sufficient to gain knowledge of certain behaviours but instead observations might be necessary. They underline that what people say they do is not the same as what they actually do. For this reason, when exploring people's usage of the park, as the chosen object for the implementation of the design principles, observations were done meanwhile the interviews only covered issues concerning the agricultural practice in the neighbourhood. However, Ekström and Larsson (2010) also mentions that observations have limitations as well since the presence of the observer might affect the behaviours of the observed. Because the observations were made in the community park, in this context considered to be a semi-public space with lots of people passing by and there by participating in the observations without having given their permission, the anonymity of the observed must be respected (Ekström and Larsson) wherefore faces on pictures taken in the neighbourhood is censored unless consent to publish the picture was given.

The second part was to observe climate, smell and sound. Forms for both the observations of the activities and the physical conditions were made

in advance and were easily filled in during the observations (Appendix 3 and 4). Each observation began by noting temperature, wind, sunlight, particular sounds and smells at the time. After that had been done, 30 minutes were used to observe the people using the park and the road circulating around the park as well as potential changes of the physical conditions.

The park was used in a multitude of ways, for this reason the categories for the activities were not decided in advance. Instead the activities were noted and categorized afterwards, while processing the material. The observations of activities were summarized in text and in diagrams. The observations of the physical conditions were summarized in text.

As mentioned, the observations of activities and physical conditions resulted in further limiting the suitable park area for implementation of the design principles. However, it also contributed to *Design Principles: Part 2* by showing how the space is used and issues that arises through its use.

Inventory of Existing Plant Material in the Park

To get an idea of the already existing plant material before implementing the design principles, a brief inventory of plants was made within the community park. Known plants were noted directly at the site. Unknown plants were photographed and determined to the best of its ability by using the site Flora of China (Source: <http://www.efloras.org/>) and Google Images (Source: <https://images.google.com/>).

DESIGN PRINCIPLES

After design principles had been extracted from the different methods presented, a conceptual design was made to exemplify how the design principles can be implemented in practice. Through the results of *the Analysis of Lynch's Five Elements*, it was decided that the conceptual design would be made in the community park of Chang le. This was further specified through the *Observations of Activities and Physical Conditions*, after which, only one part of

the community park was decided to be suitable for the implementation.

Because the chosen part of the Chang le community park was worn-out and in comparison, to the rest of the park also un-used, the old structures were not taken into consideration when starting to sketch the new structures. The sketching process was not all linear but simplified, the *Design Principles: Part 1* were used as guidelines to shape the basic structures. After the first draft was made of the skeleton of the conceptual design, the *Design Principles: Part 2* were used to develop and fill in the gaps of the skeleton. The sketching was made partly by hand and partly in Adobe Illustrator.

AGRICULTURAL CHINA

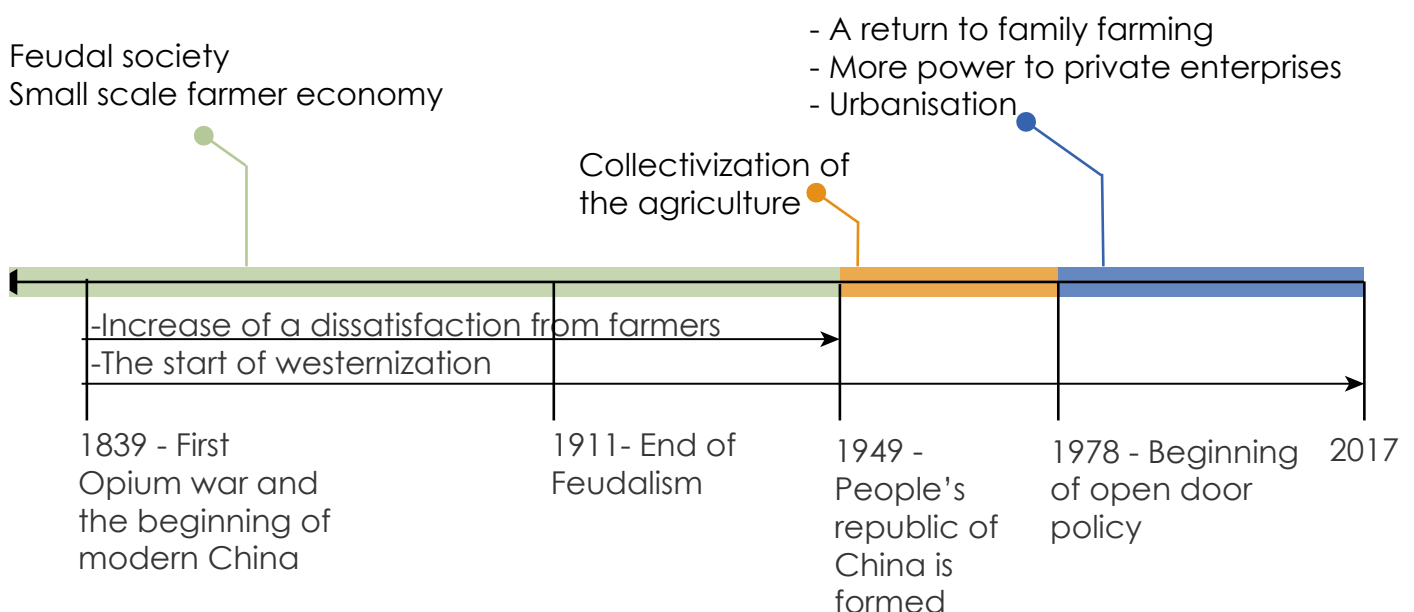
China's history is rooted in agriculture since a thousand of years. Providing oneself through farming has been highly respected and food has been considered as the foundation of the country. It is only since the middle of the 20th century that China started moving from an agriculturally based society towards an industrialised, and it is only since around 1978 that the industrialisation gained momentum. (Jin 2007; Renren 2009). Below is a general review of Chinese history and history of ideas regarding agriculture and land use.

A BASE OF IDEAS

Jin (2007) explains that the agricultural society has resulted in a patriarchal clan system, constructed with families as its basic units. The concept of families has included relatives, - through marriage and over generations, forming units consisting of a lot of people, furthermore, within this agriculturally based system and with an ideological base from the philosophies of Confucius, the status of moral was higher than that of law (Jin 2007). Moral and order were often pleaded for by the ancient philosophers. Politically and over time, Confucius

has been the most influential Chinese philosopher. His ideas, centred around a core of benevolence, contributed to an idea of a humanistic culture where monarchs and the nation were subordinate to the people. However, Confucius did not mean that the people should have the power, but that the power should serve the people (Haw 1999; Jin. 2007). The concept of benevolence was aiming to influence the governing in China. An overall attitude to not impose on others what one does not wish for oneself was going to change the way of the ruling powers as well as the behaviour of the people. Ultimately, this was supposed to result in a unified country where life would be pleasant for everyone, including the working class (Haw 1999). Furthermore, Confucianism regarded technical innovation as evil. Focus should be at cultivating one owns morality, organize one's family, take care of the kingdom and "bring order under heaven" (Jin 2007).

Many of the ancient philosophers engaged in a utopian vision of the world and politics, where equality and freedom, not least in the aspect of class distinctions, were major aspects. In Chinese modern history, this was manifested in collectivist visions and dreams of a global community (Jin 2007). Even



The agricultural development during modern Chinese history.

though, these agriculturally based thoughts have been of great value, Jin (2007) explains that they are not perfect. Equality, freedom, individuality and people's superiority over the nation and the monarchs have been theoretically important, however, Chinese culture has been manifested through a lack of democratic spirit, hierarchical structures, an admiration for superior leaders, women's subordination and a neglect of the individual.

LAST DAYS OF FEUDALISM

Between the 17th century and 19th century, China witnessed the political transformation and a technical, economic and geographical expansion of various countries around the globe meanwhile gradually starting to experience its own recession. The great days of China were soon to be over and the need to save the country from extinction became a necessity. Insufficient international exchange and fear of innovation led to a failure to develop in the pace with the rest of the world (Jin 2007; Geng 2015). However, China was not self-sufficient. Even though the country had little interest in expanding their trade with the British empire they were dependent on trade from neighbouring countries. That however, was not enough for the British Empire who wanted to increase their trade with China (Lovell 2011). An increasing interest for Opium in China became Britain's means to force an expansion of trade. When the Qing court noticed the harm of opium, a conflict arose which led to the First Opium War (1839-1842) (Lovell 2011; Geng 2015). China suffered a great defeat with loss of rights, worsened by another defeat during the Second Opium War (1856-1860).

Furthermore, this led to an expansion of the international market of China (Geng 2015). The country was still living under the rules of feudalism but after the First Opium War, they also came to be under a semi-colonial rule (Jin 2007). The First Opium War (1839-1842) was the beginning of modern China and also the beginning of the westernization process that spread both Christianity, the concept of freedom and eventually also western urban ideals and elements (Jin 2007; Gernet 1996; Yu & Padua 2006).

Jin (2007) explains that two reasons why China declined before the First Opium War (1839-1842) are connected to agriculture. One of the reasons was the inefficient small-scale farmer-economy. Land ownership formed the economic base meanwhile the household was the base for the organization of production, manifested as a combination of small scale agriculture with handicraft industry. Within this economic system, the farmers received land from the landlord. The received land was then cultivated, generating crops and cash to pay the rent meanwhile other commodities were produced on the side. Jin (2007) continues to explain that for the system to become more efficient and thereby enable development, social division in labour was needed. The small-scale farmer economy had to be reformed and the production scale had to expand. The other agriculturally connected reason for the decline of China, Jin (2007) continues, was the lack of a market and consequently a lack of competition and motives for creativity. The state monopolized most industries and from this the development became very slow. The lack of a market has been the biggest difference between China and the West



The forbidden city, Beijing

concerning social development.

END OF FEUDALISM

After the First Opium War (1839-1842) western education, often in missionary schools, became common as did overseas studies (Geng 2015). During this time, there was an over-reliance on learning the western way to reach success and the demand for reform grew strong (Jin 2007; Geng 2015). Darwinism became influential, it was considered an explanation to the geographical expansion of the Western societies. Furthermore, a reform in China became a question of increasing its competitiveness and avoiding elimination. The traditional Chinese philosophies based on a natural economy were considered inadequate for the development of the future society. Confucianism was accused of being completely incompatible with the desired democratic republic system (Jin 2007).

Because the Qing court refused to respond to the demands of reform it was not long before revolutionary parties started arising. The goal was to get rid of authoritarianism and foster civil rights (Geng 2015). Dr. Sun Yat-sen was one of the men initiating the revolution aiming to replace the autocracy with a democratic republic. Sun defined three guiding principles for the reform called “Three people’s principles”, which came to be of great importance (Jin 2007, Geng 2015). The principles concerned nationalism, democracy and people’s livelihood. The principle of “people’s livelihood” had to do with the ownership of the land. After the revolution when the value of the land had increased as a result of the post-revolutionary socio-economic development, the aim was to reform land ownership and make the state landlords. October 10, 1911 the revolution that took down the Qing court was a fact (Jin 2007).

COMMUNIST CHINA

The Communist Party of China (CPC) was eventually formed and provide the working class a place in Chinese politics. CPC tried to combine the everyday life of China and its people with the

Marxist-Leninist theories. Mao Zedong, main leader of CPC, and his party were challenged by the war of Resistance (1937–1945) against the Japanese and the need to cooperate with Kuomintang, not always likeminded. It was not until October 1, 1949 Mao declared the founding of New China and the Central Government of the Peoples Republic of China (PRC) (Jin 2007). Mao was welcomed by the people. It had been a long time since China had been ruled by a united force. Furthermore, CPC promised land reform to a people consisting mainly of dissatisfied farmers (Haw 1999). The landowners accounted for 10% of the people meanwhile owning 70-80 % of the land, an issue generating exploitation of the working farmers renting the land (Jin 2007).

CPC had a lot of challenges ahead. The Chinese population was large but poor, in a still agriculturally based society with an underdeveloped industry, a poor schooling system and an illiteracy rate of 80%. Financial means were set to be achieved by confiscating monopoly capital of the previous political system and at the same time, trying to develop a state owned industrial system. Furthermore, the promised land reform became reality and the feudal land ownership was replaced (Jin 2007). The previously private owned farmlands became collectivized. Not only the land that was subjected to reform but also the farm animals and the farm tools were taken into public ownership meanwhile the product was distributed in accordance to the labour (Renren 2009). By 1956 the agriculture was almost fully collectively owned (Jin 2007). According to Haw (1999) the number of executions during this reform were close to 2 million and meant an extermination of the previous ruling class and thereby complete power of state. Dikötter (2012) furthermore, claims the reform to have been the cause of a great catastrophe. Mao stressed development, not least in agricultural production. He insisted that the sowing of seeds should be done very tightly and deep to increase production efficiency but the seeds could not grow under these circumstances. Meanwhile, iron was collected from people’s belongings to use for large infrastructural initiatives resulting in farmers without tools to farm. Ultimately Dikötter (2012) explains, the attempt to streamline the Chinese society, instead led to a great famine with a loss of at least 45 million people. Furthermore, this development dissolved

the societal structure with families as the basic units. Renren (2009) means that after the collectivisation the agriculture was unstable and stagnant for two decades. Furthermore, he claims the collectivization of the agriculture to have caused lasting effects on the urban-rural relationship. Prices of the products were minimized meanwhile the rural production activity limited to only agriculture. These constraints resulted in a larger economic divide between rural and urban areas.

OPEN DOOR POLICY

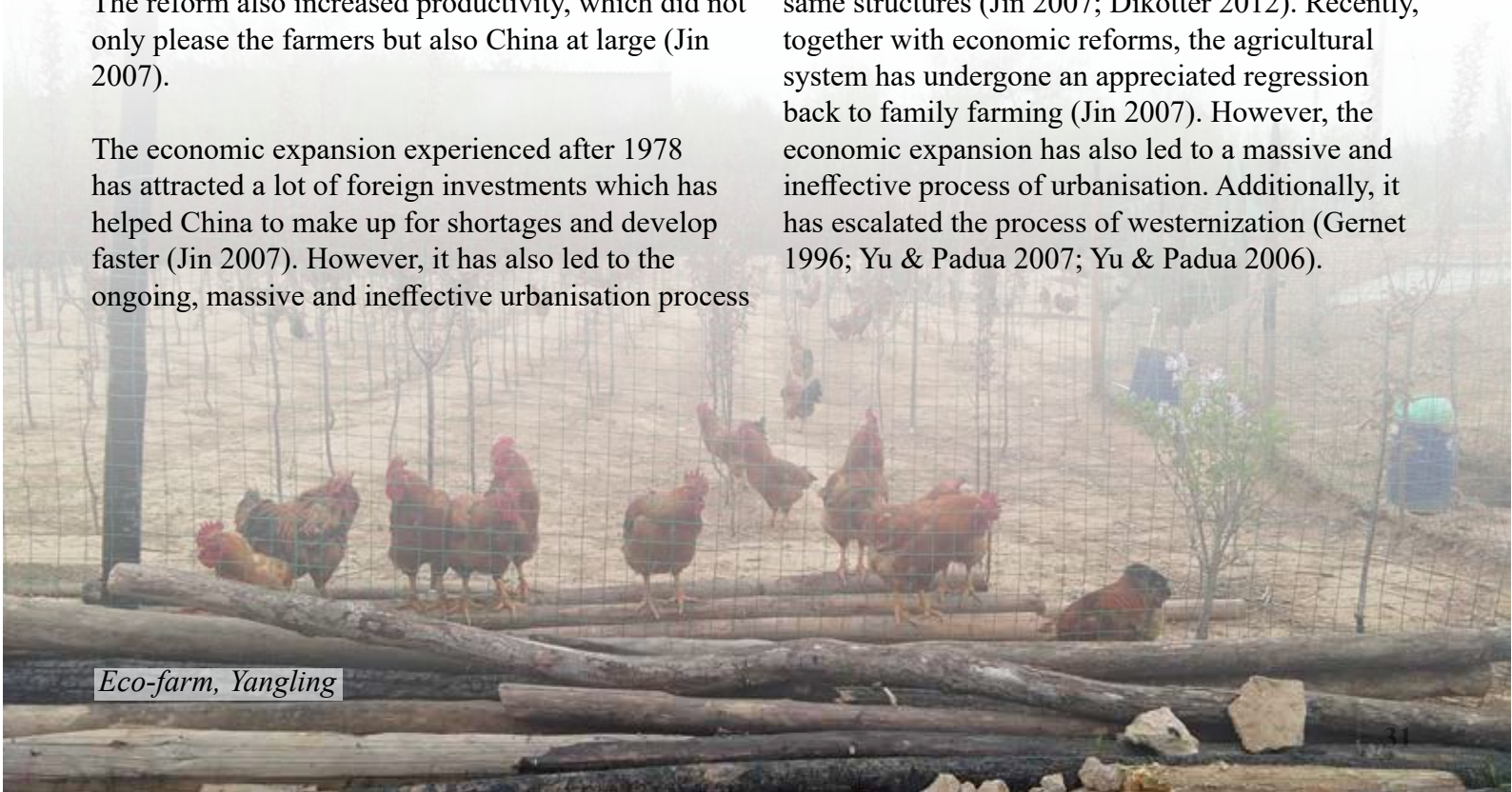
Mao Zedong passed away 1976. A change of leader resulted in a more liberal climate for new ideas and soon a reform was initiated. The concentrated planned economy was replaced with a socialist market economy and various cities were made accessible for global trade. The year 2001 China became a World Trade Organisation Member, which made it possible for China to open up in a multidirectional way (Jin 2007). After 1976 the agricultural policies also changed and a return to family farming, increased authority to small private companies and a reintroduction of production-dependent incomes were realized. From this, the countryside was brought back to life and activity (Gernet 1996). The rural economic reform was completed at 1982 and was very successful and highly appreciated by the farmers due to the direct link between the farmers and the product. The reform also increased productivity, which did not only please the farmers but also China at large (Jin 2007).

The economic expansion experienced after 1978 has attracted a lot of foreign investments which has helped China to make up for shortages and develop faster (Jin 2007). However, it has also led to the ongoing, massive and ineffective urbanisation process

which in turn is resulting in a loss of arable land. The loss of arable land in China since 1949 is estimated to be as high as of 20% (Globalis 2015; Li 2015). The want to attract foreign investors is also manifested by conforming to western ideals (Yu & Padua 2007; Yu & Padua 2006).

IN SUMMARY

Agriculture, the source of the food considered as the foundation of the Chinese culture, affected Chinese life immensely on many aspects. Early agricultural life shaped traditional Chinese philosophy which in turn effected the politics (Jin 2007). However, this foundation has not always been stable. The Chinese agricultural history has been lined with poverty and inequality (Jin 2007, Renren 2009). In the feudal system, the ownership of land was an oppressive and exclusive tool (Jin 2009; Haw 1999). Later a reform of landownership would be one of the main issues of CPC to increase equality which would furthermore be the start of the process of leaving the agriculturally based society (Jin 2007). Still today the agricultural reform initiated in the 1950's, makes itself remembered in the economic division between rural and urban areas (Renren 2009). Agriculture has even taken part of shaping Chinese social life. It was the basis to the family oriented social structures and in the new collectivized form, what repealed those very same structures (Jin 2007; Dikötter 2012). Recently, together with economic reforms, the agricultural system has undergone an appreciated regression back to family farming (Jin 2007). However, the economic expansion has also led to a massive and ineffective process of urbanisation. Additionally, it has escalated the process of westernization (Gernet 1996; Yu & Padua 2007; Yu & Padua 2006).



UNDERSTANDING XI'AN

Xi'an was first established 3100 years ago and is a culturally and historically important city in China. It is one of the ancient capitals and served as the capital of 10 dynasties, of which three were of dynasties of a unified China. Today it is the capital of Shaanxi province (Xi'an international 2014²; Jin 2007). Xi'an was the eastern departure road of the silk road, a very important crossroad for people from within China, Central Asia and the Middle East. This made Xi'an a natural meeting point for people of various ethnicities and religions. It was furthermore one of the earliest cities that opened up to the outside world (Xi'an international 2014¹; UNESCO no date).

During 24 AD, Xi'an became degraded to a provincial city when the Han dynasty collapsed and it was not until the 4th century AD that its status as capital was resurrected, partly because it became a centre for Buddhist learning. Except for Buddhism - Taoism and Confucianism was also important beliefs

systems in Xi'an. Xi'an was the first major city in China to adopt Confucianism (UNESCO no date; Walcott 2013). However, during the Tang dynasty (618-904) the religious pluralism in the city was even greater, the city functioned as a centre for various other religions as well, for instance Zoroastrianism, Nestorianism and Manichaeism. After the fall of the Tang dynasty, the tolerant climate decayed as did the influence of Xi'an and its status as the capital (UNESCO no date).

The city had a revival during the Ming dynasty (1368-1644) from when the city walls were built, still seen standing in Xi'an today. Even though Muslim merchants arrived much earlier it was first under the Ming dynasty the city's Muslim community could be properly integrated into the Chinese society. The Muslim community has made important prints on the architecture of Xi'an, such as the great mosque situated in a Muslim quarter very close to the western



The great mosque, Xi'an.

market (UNESCO no date). This is the largest mosque from the minority people Hui, in all of China (Haw 1999). Furthermore, during the Ming and Qing (1644–1912) dynasties, the merchants of the western market had an important role in the maintenance of the trade with the West, along the Silk Roads to Inner Asia (UNESCO no date). Still today, many minority people inhabit the city (Hansen 2012).

After 1949 when the democratic republic of China was formed (Gernet 1996), Xi'an soon became an important political centre in the Northwest region of China. It was furthermore first after 1949 that Xi'an became industrialised (Yin, Shen & Zhao 2005).

Between the years 1949 and 2000, Xi'an expanded from mainly being centred within the Ming Dynasty City Walls on a surface of 40 km², to a surface of 187 km² reaching out from the city centre to all directions (China State Statistical Bureau 2001 see Yin et al 2005). Yin et al (2005) claims that today, most industrial development is taking place within the structures of second and third ring road. Xiu (2017) means that the ring road system Xi'an is built up around has caused severe fragmentation of green

areas. Furthermore, Yin et al (2005) explains that the major development that started after the formation of the Democratic republic of China in 1949, has led to significant changes of the agricultural lands around Xi'an. Because of industrial restructuring and marketization of urban land, agricultural lands have been converted into areas with industrial and urban uses.

IN SUMMARY

Xi'an has over time been a hub for a diversity of cultures and religions (UNESCO no date) and is still inhabiting many minority people (Hansen 2012). The city was industrialised first after the formation of the democratic republic of China and has thereafter gone through major physical transformations concentrated within the second and third ring roads (Yin 2005). The ring road system is a cause of fragmentation of the green infrastructure (Xiu 2017) meanwhile the industrialisation and urbanisation is carried out at the expense of agricultural lands, in similarity with the general development in China (Yin 2005; Li 2015).



Guangren Temple- a Tibetan Buddhist monastery, Xi'an.



INTRODUCTION

THEORY

The theory consists of two parts. The first one, *High Vs. Low Culture of China* presents criticism towards a general ornamental approach in Chinese urban and green design. The second part *Practicalities of Urban Agriculture* investigates implications and potentials of UA.

FIELD STUDY

RESULTS

HIGH VS. LOW CULTURE OF CHINA

Under this title, the first out of two parts of the chapter *Theory* is presented. The section "High vs. Low Culture of China" is furthermore divided into three parts. The first part explains the characteristics of the ornamental high culture of Chinese gardening and its place in the Chinese landscape architecture and garden history. The second part presents the ideas of the contemporary Chinese landscape architect Kongjian Yu, proponent of what he calls "the low culture of China" and a productive city landscape rather than an ornamental one (Yu 2009; Bergaust & Jørgensen 2013). Finally the third part treats the issue of urban land-use efficiency in relationship to the conflicting interests between ornamental landscape architecture and productive landscape architecture

CLASSICAL GARDENS

Under this title the literature study of the classical gardens is presented.

History and Ideas

What is usually considered to be the traditional Chinese gardening and what Kongjian Yu includes in his concept of "the high culture of China" (Green 2008), originated from an old concept that can be traced back from 1600-256 BC and is called animal farms or hunting parks. The hunting parks were vast reserves, consisting of natural landscapes where animals were bred and later hunted, for the amusement of the emperors. With time, specifically between 475 and 221 BC, the hunting parks became refined. The idea of the park as a microcosm of the empire emerged and Chinese gardening, as a creative artform, arose (Liu 2012; Keswick 2003). Only a

few year later, man-made gardens became common in both imperial and private residences. During the Han dynasty (206 BC-220 AD) the garden style developed into an imitation of natural scenery where real elements of nature were reproduced. Furthermore, gardening became influenced from the spread of Daoism which contributed with a want to build "the mystical lands" (Liu 2012). High walls around the garden aimed to cut off the garden from the surroundings so the inside would be completely turned towards nature (Keswick 2003). Daoism, as Buddhism, became even more influential during the Wei and Jin dynasties (220-265: 265-420). Influences from Zen-Buddhism during the Jin dynasty changed the focus, from creating vast and spacious gardens to instead finding the spirit of nature in sparsely limited sceneries and smaller elements. The Daoism's belief in deities made itself apparent in the garden art by reproducing sacred natural elements, such as mountains inhabiting gods, in the gardens. Additionally, had the Confucian teachings of balanced poetry and rational education also a major impact on the Chinese traditional gardens. The aim to establish a harmony between man, heaven and earth were supposed to be mirrored in the gardens. By creating beautiful, natural sceneries a harmony between the scenes and the self was supposed to be achieved (Liu 2012).

Characteristics

Liu (2012) points out typical features of the classical Chinese gardens, these are listed below:

Space: The traditional gardens are designed with the intention to create an illusion of viewing a never-ending garden landscape and an experience of all of nature through the garden sceneries. This

is accomplished by dividing and varying the space in the gardens into different rooms and creating well thought out sightlines in between showing just the amount of information to detect a beautiful continuation. The sightlines are sometimes limited by elements such as buildings or a rockery, sometimes it is instead framed by a window, a doorway or an open corridor (Liu 2012).

Light: By placing narrow and dark corridors in the borders between two rooms in the garden, eyesight is restrained so when the corridor has led one to the new room, the contrast of light and space will make the room appear larger and brighter (Liu 2012).

Natural and organic shapes: The classical gardens try to imitate nature and diminish the appearance of a man-made landscape. A varied topography as well as lingering paths following the form of the landscape are some approaches used to achieve this (Liu 2012).

Water: Lakes, ponds, moats, wellsprings and waterfalls are examples of waterbodies being used

in the traditional gardens. Water is an important feature both for the completion of the sceneries and the addition of movement but also for providing possibilities for a more varied interaction with the garden (Boating, picking lotus seeds, drinking) (Liu 2012).

Buildings: Buildings are used to decorate the gardens and can be sorted as halls, verandas, towers, boat shaped halls, pavilions, corridors, internal walls and boundary walls (Liu 2012).

- **Rockeries:** Rockeries are reproductions of real mountains. The rockeries constitute the skeleton of the gardens (Liu 2012).

- **Bridges:** Bridges are used to cross waterbodies and can be arched, flat, reaching a pavilion or be covered itself (Liu 2012).

Plants: Carefully placed out on the right spot depending on the kind of plant and furthermore, used as either solitary trees, in group plantings or in thick growth (Liu 2012).



Variation in space and light in Garden of the master of the nets, Suzhou



Rockeries and pines in Lingering Garden, Suzhou



Buildings and waterbody in Lion Grove Garden, Suzhou.




Zigzag-bridge over waterbody in Humble Administrator's Garden, Suzhou.

KONGJIAN YU'S IDEAS OF LANDSCAPE ARCHITECTURE

Kongjian Yu proposes a different approach towards the designed landscape than what was practiced by the old masters. He advocates an expanded role of the landscape architect in China, from a non-productive gardener towards an important participant in the work of rebuilding what he calls “a new Land of Peach Blossoms for a new society of urbanized, global, and interconnected people”. The Land of Peach Blossoms, Yu means (Yu & Padua 2006) is a utopian image derived from an ancient Chinese story by Tao Yuanming (365-427AD) about a flourishing rural society where the inhabitants are living in harmony with themselves as well as with nature. Still today societies exist that through generations of dependence and adaption to the land and nature has managed to co-exist and make the most out of these resources without destructively exploiting them. However, this way of life has not been cherished as it has been highly associated with

labouring and inferiority. The land of peach blossoms has however, been a desired concept within the art of gardening but on a superficial level. The strife has been for its beauty only, attempted to be achieved by copying and replicating it in small scale landscapes. This has furthermore become an art that is still very much appreciated as well as associated with the Chinese culture and national identity (Yu & Padua 2006). Yu acknowledges this as a heritage but means that it is not what we should be focusing on (Green 2008). It is from the Land of Peach Blossom Chinese landscape architecture as an art of survival derives from, and it is towards the art of survival, landscape architects should return (Yu & Padua 2006).

The agricultural base is highlighted by Yu. He explains how this culture has been developing for 5000 years, but has been neglected. It is however the functional culture of China and must now be given space. Yu furthermore underlines the importance of designing for the common people in their everyday life instead of mainly attempting to please the high class. He mentions that for a design to be sustainable, local material and native species should be used as part of keeping the design “common” (Jared Green 2008).



Perhaps a land of peach blossoms, Yangdi.

The land of Peach Blossom is what landscape architects in China should aim for when practicing their profession, not to revert to a mainly agricultural society or to create miniature landscapes of it but by purposing to create a mutual, spiritual and non-destructive co-existence between human and nature, also in urban areas (Yu & Padua 2006).

Yu proposes his project Red Ribbon Park in Qinhuangdao as a good example where minimal intervention has been made in nature, preserving the ecological values. However, he also means that by adding one strong cohesive element in this landscape, in this case in the shape of a ribbon, functioning not only as a bench but also for lighting, the landscape is made more dramatic (Green 2008). The rice campus of Shenyang Jianzhu university, Liaoning province, is another project by Turescape where agricultural landscape has been made into a part of an urbanized environment, in which it is demonstrated how cultural identity can be reflected by an ordinary agricultural landscape (Saunders, W, S 2012 ss. 50). Cultural identity is one of three issues that needs to be addressed in China. The traditional identity of China is rooted in the feudal society and its hierarchical political and social order. The developments since the 1980's however, changed that and now westernization is another force shaping

the identity. China is torn between the past and the present and must question both to find its own way to continue. Meanwhile, landscape architecture should try to harmonize the design with humanity, human culture and identity (Yu & Padua 2006).

The environmental crisis is another of the three issues important to address. The massive GDP growth and the fast urbanization process causes environmental impact, economically the two cancel each other out, or even turns negative (Yu & Padua 2006). Yu means that in a country where 20 % of the world's population relies on 7 % of the world's resources, which furthermore to a large extent are polluted, it is not an option for landscape architecture to be ornamental (Jared Green 2008) instead it should be harmonized with natural processes and patterns (Yu & Padua 2006).

The third issue important to address regards an enhancement of a spiritual connection between the people and the earth. Before, nature was often considered to be animated. The spirits within the natural elements gave purpose to life. Today the ensouled mountains and streams have been dug up and replaced by materialism and real estate development (Yu & Padua 2006). Through landscape architecture however, Yu & Padua (2006) means that we can find a solution and reconnect to the Land of Peach Blossoms.



Red ribbon park, Qinhuangdao

URBAN GREEN LAND-USE

Even though hunger has decreased in the world, one in seven is still not getting enough protein and energy meanwhile an even higher number of people are suffering from micronutrient malnutrition (Godfray et al 2010). In countries where refrigerators in the household are nothing certain, the upbringing of leafy green vegetables are common examples of urban agricultural practice. These leafy green vegetables are often cultivated within a distance of 30 kilometres from the city centre (De Bon et al 2008). Several potential benefits with UA can be mentioned such as simple provision of fresh vegetables to urban residents, above all to the poorer population, employments, ecological values (provided it is done correctly), community building properties (De Bon et al 2008; Smit & Bailkey 2006) and specifically important in China, the recreation of a connection to the agricultural lands (Yu 2006; Saunders, W, S. 2012). Furthermore, UA can reduce transportation costs for produce as well as create opportunities for waste management and nutrient recycling (Mubvami and Mushamba 2006).

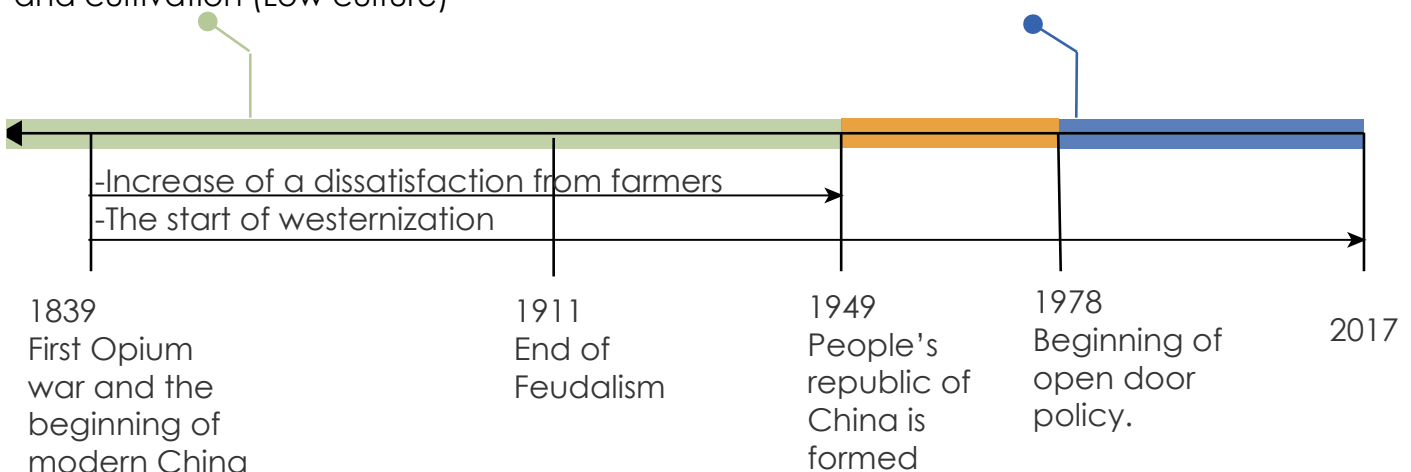
UA also exists within the neighbourhoods of China (Ignatieva et al. 2015). However, even though the

land use development in China is inefficient and a major decline of arable land is happening outside the cities (Li 2015), western non-productive green elements are being adopted in the Chinese urban landscape architecture (Yu & Padua 2007; Ignatieva et al 2015). In contrary to the contemporary development, Yu (2009) presents his vision of a developed urban agricultural landscape. He means that instead of adopting non-productive green elements, the cities should be made more productive with edible public green spaces.

Yu and Padua (2007) discusses the adoption of western elements in Chinese urban space and the negative impact it has got on social, ecological and cultural conditions of the cities. It is stated that the ongoing trend in residential China is to mirror residential areas in Orange County, California, despite the difference in climate and standards of construction and maintenances. One element that is being mentioned as an example is the adoption of the well-maintained grass lawn. Yu also discusses the lawn in an interview with Architecture Norway (Bergaust & Jørgensen 2013), where he denotes it as a “small foot aesthetic”, drawing parallels between the short cut and highly cultivated lawn and the old culture of foot binding in China. Ignatieva et al. (2015) discusses the subject further and explains

- Feudal society.
- Gardening (High culture)
- Agricultural art of landuse and cultivation (Low culture)

- Usage of western elements in landscape architecture begins (High culture).
- Urbanisation and strain on environment



Timeline showing the development of landscape architecture in the context of low and high culture during modern Chinese history.

how a significant amount of typically western forms of green space, and western elements of greenery such as lawns, have been frequently used since the Chinese Economic Reform 1978.

Fengping Yang (2017) explains that in China, the well-maintained lawns are a costly and resource-consuming part of a globalized landscape, furthermore they are a monoculture with low biodiversity. They demand intensive maintenance and advanced chemicals. The grass species in the turf is not suitable for the climatic conditions in China, still they can be seen all over the country. Moreover, the tools to maintain lawns is also imported from Europe or North America and adds to the costly calculations. The intensive management of the lawns in China may, in addition, have severe environmental impact. Except for pollution from the chemicals, the mowing can cause greenhouse gas emission and furthermore, the irrigation demands a high use of water. Yang (2017) also means that many of the lawns are not used, partly because managers worry about tearing the lawns and therefore fence them but also because of a lack of tradition using them.

A Swedish study by Ignatieva et al (2016) investigated people's attitudes about conventional grass lawns (short cut and well maintained) as opposed to alternative lawns (meadowlike or short herbaceous lawns) in Sweden. The study shows that the conventional lawns, even in Sweden, are more expensive than alternative laws and often are

regarded as an ornamental element rather than an actively used component. The study concludes that well used green space should be well maintained meanwhile lawns and green spaces not used as much should be considered being redesigned with alternative lawns. Costs, environmental benefits and people's need for variety should be taken into regard while making this judgement (Ignatieva et al 2016).

Yang (2017), discusses the issue of alternative lawns in China and means that since the 2000s China has been following this trend that started in Europe in the 1990s. However, she mentions that it is not certain that the European examples of alternative lawns should be used in China. This was done in Xi'an but had to be removed as the species used were invasive. Yang (2017) means that suitable, native plants for alternative lawns must be chosen, however it is a challenge due to a long, historical transformation of the landscape, leaving some native plants extinct with exotic plants taking their place. Furthermore, she means that the people's perception of the lawns should be further investigated in China. Yang (2017) also mentions Kongjian Yu's use of native, often herbaceous plants and agricultural crops as an example of options for the conventional lawns.

Ignatieva et al (2015) explains that the standardized and non-productive greenery for instance lawns, but also trimmed hedges and flower beds, are often used inside living neighbourhoods in China.



Fenced lawn in the City Wall park, Xi'an.

However, they also note that in some cases, the residents have turned the neighbourhood lawns into community gardens, even in recently built neighbourhoods. According to the writers, this can be derived from the agricultural history many urban residents have. People migrated to the cities, from the life as farmers on the countryside with a hope for a chance of better living conditions. Yu (Yu 2009; Bergaust & Jørgenssen 2013) means that the agricultural part of the Chinese culture has been neglected as society, not least the Western society, has chosen to focus on what he calls the high culture of China practicing the earlier mentioned small foot aesthetics. The small foot aesthetics, Yu (Bergaust & Jørgenssen 2013) means, includes the contemporary well-maintained lawns as well as the classical Chinese gardens.

In another interview with Kongjian Yu, by Jared Green (2008) for American Society of Landscape Architects, Yu further discusses agriculture as the “low culture of China” in opposition to the Chinese high culture. He explains the Chinese classical gardens to be the traditional fine culture but he calls the high culture of China a heritage meanwhile underlining that it is a dead heritage. Furthermore, he explains that in China the high culture has mistakenly been regarded as the only tradition, forgetting about the low culture, - the agriculture, the field making, irrigation and land use. Yu (Jared Green 2008) regards the high culture to be beautiful but it is for the elite and it poses no benefits except for its ornamental values. He continues to explain that the low culture of China, on the other hand is

very functional and useful and that this is, as an art of survival, what we should be focusing on during a time when humans, especially in China, are standing at the edge of survival.

IN SUMMARY

The increased use of lawns in Chinese public space since 1978 (Ignatieva et al 2015) causes environmental distress and lacks a historical context (Yang 2017; Yu & Padua 2007). Meanwhile, some people are actively replacing neighbourhood lawns to practice agriculture (Ignatieva et al 2015), a practice that, if it is done correctly may have both social, cultural and environmental benefit (De Bon et al 2008; Smit & Bailkey 2006; Yu & Padua 2006; Saunders, W, S. 2012; Mubvami and Mushamba 2006). Yu proposes landscape architects to adopt a functional role working for sustainability in a cultural, environmental and spiritual context, in which a developed urban agricultural landscape is included rather than an adoption of non-productive, ornamental elements (Yu 2009).



Small scale agriculture in central Xi'an

PRACTICALITIES OF URBAN AGRICULTURE

Several potential benefits with UA have already been mentioned such as simple provision of fresh vegetables to urban residents, employments, ecological values, community building and integrating properties (De Bon et al 2008; Smit & Bailkey 2006) the recreation of a connection to the agricultural lands in China (Yu 2006; Saunders, W, S. 2012) and the potential of UA to reduce transportation costs for produce as well as create opportunities for waste management and nutrient recycling (Mubvami and Mushamba 2006). However, all of these are, as mentioned, only potential and furthermore stand side by side with potential harm. Another issue with UA is that there is rarely enough space in the cities, why choosing to enable practice of UA in the city is a question of prioritization (Baskoro 2015). The previous chapter, *High vs. Low Culture of China*, suggests that lawns could be replaced with edible plantations however, lawns and the cultivation of edible crops in the cities share many negative implications additional to their demand for space. As lawns, UA often have a high requirement for irrigation and can therefore also pose a threat to urban water reserves (Stewart et al 2013; Yang 2017). The practice of UA is furthermore often, also in similarity with lawns, a source of pollution through an intensive use of pesticides and fertilizers (Stewart et al 2013; Yang 2017). These are only some of the negative aspects of UA. Further problems necessary to address are how to enable UA to be a source of food without also being a source of pesticides, heavy metals, an excessive amount of trace metals, bacteria and parasites for the consumer (Stewart et al 2013; Buechler et al 2006; Olowoyo & Lion 2016). Additionally, UA can result in conflict of land-use. Below, suggested methods addressing the above-mentioned issues are presented.

ENVIRONMENT AND CLEAN FOOD SUPPLIES

Mougeot (2000) means that for UA to be an asset, as a complement to rural agriculture, it must be integrated in the local urban economy as well as the ecological system. Mubvami and Mushamba (2006) claims the same and furthermore points out that UA is rarely included in the planning processes of developing countries and that the planning therefore often creates a disadvantage towards the practice of urban agriculture. When it is included, issues such as the usage of hazardous pesticides and fertilizers can be addressed and thereby prevented meanwhile ecological methods of UA production can be promoted. However, Stewart et al (2013) points out that there is a lack of reliable empirical data supporting the impact of UA which may be a reason why urban planners are reluctant to embrace it.

Concerning UA and biodiversity, it is important to again mention the claim of Lin et al (2015) that urban agroecosystems only recently have been documented and require synthesis. Furthermore, a wide range of diversity can be seen depending on each and every garden. Concerning selection of plant species, not specified to UA, Yang (2017) underlines the difficulties of selecting suitable native plant material in China due to a long-term transformation of the landscape and exchange of species.

Different ecological methods that can be used to decrease the need for pesticides and thereby promote biodiversity. One example of these methods is agricultural rotation which is when different species of crops successively rotates their place on the fields in a certain order through time (Thrupp 2009; NE no date³). Another method is multiple cropping which is when different species are planted close to each other to decrease the target for pests (Thrupp 2009; Gaba et al 2015). An example of beneficial multiple cropping is to plant cabbage together with onions and/or tomatoes. The cabbage is sensitive to diamond back moth. By planting onions or tomatoes, as non-hosts of the diamond back moth, next to cabbage, infestation is prevented (Asare-Bediako et al 2010). Yet another method to decrease the need of pesticides is to use

insects as a way to create resilient crop plantations. By creating an ecosystem beneficial for certain insects acting as predators of pests, pest diseases can be decreased substantially (Thrupp 2009).

Additionally, there are ecological methods that can be used to decrease the need for chemical fertilizers and be a component of waste management and nutrient recycling. One example is the use of compost from organic residues for instance from crop waste and tree/bush litter. Another method is to plant legumes together with other crops as it adds nutrients to the soil by fixing nitrogen. A third way is to integrate earthworms and other organisms in the soil that enhances nutrient recycling (Thrupp 2000). Agricultural rotation has furthermore been shown to be able to result in a more fertile soil in terms of organic material and nitrogen as well as being a pest-repellent. This however, assumes that the crops result in high residues which in turn, are not separated from the soil (Havlin et al 1990; Thrupp 2009).

One way to save freshwater, common in China, can be to instead use wastewater for irrigation of UA. However, untreated wastewater increases the spread of roundworm, hookworm and whipworm, typhoid, cholera and bacterial diarrhoea. It can also be a major source of industrial pollutants that could affect human health. There is no simple solution to managing wastewater used for irrigation or UA. One solution however, can be water treatment where pollutants are removed, another solution is to use the most contaminated water to non-edible plantations (Buechler et al 2006).

Furthermore, can UA be a possible source of trace metals in human diets, an issue that has become increasingly common. (Olowoyo & Lion 2016). With this in regard it can be mentioned that the topsoil in Xi'an within the area of the 2nd ring road contains a higher amount of the heavy metals Co, Cr, Cu, Mn, Ni, Pb, Zn, V than the background values of Shaanxi soil (Xiuduan et al 2012). To manage contaminated soil thoroughly an entire exchange of soil is required, however that is a costly event. A cheaper option is to make a raised bed and use barrier textile and new soil on top of the contaminated soil (Kessler 2013).

CULTURAL IDENTITY AND COMMUNITY BUILDING

With Chinas deep connection to the agriculture, a recreation of a connection to the agricultural lands can be important. As demonstrated in Houtan Park, Shanghai and the rice campus of Shenyang Jianzhu university, this can be made by using agricultural crops as building blocks in the public space (Yu 2006; Saunders, W, S. 2012; Yang 2017). Smit and Bailkey (2006) means that UA can pose community building qualities regardless of scale. UA can be used for this purpose in a neighbourhood as well as an entire city. For it to be successful, it should however be developed thru an understanding of the relevant community where the interventions are specifically adapted to the current circumstances. Mubvami and Mushamba (2006) discusses a similar issue and means that it is common for conflicts to arise between the use of land, the users of the land and the regulatory framework for urban agriculture. Distribution, control and access to the land can be very problematic. However, they mean that by including various users, managers and stakeholders in the process of integrating agriculture in the urban land use, these conflicts can be minimized.

IN SUMMARY

UA implies many possible benefits as well as possible harm, this needs to be addressed. However, a lack of reliable empirical data supporting the impact of UA makes planning for urban agricultural practice difficult. For some issues landscape design can possibly contribute to a solution. For instance can certain methods be used to decrease the need for pesticides and chemical fertilizers, many of them based on plantation techniques ((Stewart et al 2013; Thrupp 2000). Issues concerning pathogens, heavy metals and other pollutants in the soil can be addressed through isolated raised plant beds with clean soil (Kessler 2013). However, issues concerning selection of species and irrigation are difficult to solve. Additionally, it is important to include all of the affected parties in the planning process to minimize risk for conflicts (Mubvami & Mushamba 2006).

Design Principles Derived From Theory

All issues and concrete tips found in the literature concerning the kind UA this thesis is limited too, were remade into the design principles listed below.

- Adapt the developments of UA to the specific community and their users (Smit and Bailkey 2006).
- Inclusion of various users, managers and stakeholders in the process of integrating agriculture in the urban landscape (Mubvami and Mushamba 2006).
- Unused lawns can be used for alternative purposes (Ignatieva et al 2016) eg. agriculture.
- Make sure the ground/soil/water for irrigation being used is clean without high heavy metal contents, parasites and other pollutants (Kessler 2013; Buechler et al 2006).
- Decrease need for pesticides by design (Thrupp 2009).
- Decrease need for chemical fertilizers by design (Thrupp 2009)
- Integrate UA with management of organic waste (Mubvami and Mushamba 2006).
- Use native plants (Yang 2017).



INTRODUCTION

THEORY

FIELD STUDY

Under Field Study, the investigation made on site is presented.

RESULTS

YU AND THE CLASSICAL GARDENS

Under this headline, the determined common denominators between Kongjian Yu's parks and the classical gardens, constituting the *Design Principles: Part 1*, are presented. But first is a brief presentation of the visited parks of Kongjian Yu.

Sponge park (Green Gallery in Fengxi) is a park made by Turenscape in Xi'an. This park is a project being constructed right now in the developing city part; Fengxi New City of Xixian New Area. The base of the Sponge Park is a designed sink in the landscape made to control the urban rain water. The aim is for the park to become an eco-park and a water-demonstration park, constructed after local conditions to purify water and achieve good water balance in the best way (Turenscape 2016).

Houtan Park is a park made by Turenscape. It is located in Shanghai on a former brown field. A constructed wetland is combined with ecological flood control, UA and a reuse of the old industrial structures and materials. The design of the park aims to restore the very polluted water and the waterfront meanwhile offering a beautiful park. The park has a large height difference which has been used as a means to create terraced ground for agricultural plantations, to connect to the preindustrial, agricultural history of Shanghai (Turenscape 2009¹).

Red Ribbon Park is a park made by Turenscape. The park is located in city Qinhuangdao, Hebei province,

by the Tanghe river at a site that was earlier used as a garbage dump. The site's vegetation consists of a variety of native flora which, in addition, is providing with a diversity of habitats and of species, something Turenscape wanted to preserve when creating Red Ribbon Park. Because of this, the design of the park was made modest and consists mainly of a boardwalk followed by the red ribbon bench, meandering through the linear space of the park beside the riverbank. There is also four pavilions along the red ribbon that provides with shelter from the weather (Turenscape 2009²).

COMMON DENOMINATORS

Even though Yu (Yu and Padua 2006; Yu 2009) severely criticizes the gardens regarded as the classical gardens in China and even compares them to foot binding, Yu (Bergaust & Jørgensen 2013) also admits that there are lessons to be learned from the classical gardens in terms of dimension, space and colour why an analysis was made to detect common features of the visited parks by Yu and the classical gardens. The features typical for the Chinese classical gardens stated by Liu (2012) is used as a base for the analysis but is complemented with additional common features I discovered while visiting the classical gardens and Yu's parks.

Space: As done in the traditional gardens, Yu also creates illusions of greater space by creating rooms in the park with limited but carefully placed sightlines. This is evident in the Sponge Park where artificial hills are used to limit space and create smaller rooms attached to the greater room by the watercourse, as well as to limit the sights out from the park. Also in Houtan Park and the Red Ribbon Park a similar effect is achieved partly automatically as a result of the immersed river beds but also the generous vegetation around, enhancing the walls and more effectively cutting of the surrounding city landscape.



Linger Garden, Suzhou



Sponge Park, Xi'an



Houtan Park, Shanghai



Red Ribbon Park, Qinhuangdao

Light: Evident in the Sponge Park as well as in Houtan park, Yu uses a variation of open and narrow space to add complexity. In Sponge Park, sections of narrow bamboo corridors are used meanwhile, in Houtan Park, the main path on one of the sides of the water course, is drawn through a smaller forest which occasionally opens up towards the large open water room. Although less apparent in Red Ribbon Park, a similar contrasting corridor exists there .



Linger Garden, Suzhou



Sponge Park, Xi'an



Houtan Park, Shanghai



Red Ribbon Park, Qinhuangdao

Natural and organic shapes: In all of the visited parks of Yu the paths are generally softly winding and appears natural in terms of topography.



Garden of the Master of the Nets, Suzhou.



Sponge Park, Xi'an



Houtan Park, Shanghai



Red Ribbon Park, Qinhuangdao

Built elements: Elements such as bridges and modern structures similar to the pavilions used in the traditional gardens are also used by Kongjian Yu. In Sponge Park ,there is islands in the water functioning similarly to floating pavilions seen in the classical gardens, allowing the visitor to come closer to the water. In the red ribbon park cloud shaped pavilions were found and Houtan Park has a large pavilion by the warf. As seen in the classical gardens, Yu also uses stepping stones seen in the classical gardens. While visiting the classical gardens as well as Yu's parks it was also noted that many built elements are recurrent throughout the parks.



Humble Administrator's Garden, Suzhou



Sponge Park, Xi'an



Houtan Park, Shanghai



Red Ribbon Park, Qinhuangdao

Water: Water has a central part in all visited parks of Kongjian Yu in similarity to the classical gardens.



Lion Grove Garden, Suzhou.



Sponge Park, Xi'an



Houtan Park, Shanghai



Red Ribbon Park, Qinhuangdao



Sponge park, Xi'an

XI'AN INVENTORY & ANALYSIS

Under this headline the inventories of Xi'an is presented.

XI'AN ZONING

This section shows a brief zonation of my interpretations of the area of interest in Xi'an and its physical main characters. However, first can be repeated that Xi'an's current city structure has expanded from the old city walls, a development that continues but now, around the second and third ring roads (Yin et al 2005). Furthermore, general for the whole city is that residential and industrial areas are very enclosed, often large walls surrounds them, creating a multitude of long barriers though out the city.

Historical area: This area is delimited by the city walls and consists of the old town, various historical sites and buildings but also new parts with high

rise buildings, mainly along what is also marked as the Subway Zone. This area is dense and contains many of the governmental buildings in Xi'an as well as different kinds of businesses and residential buildings.

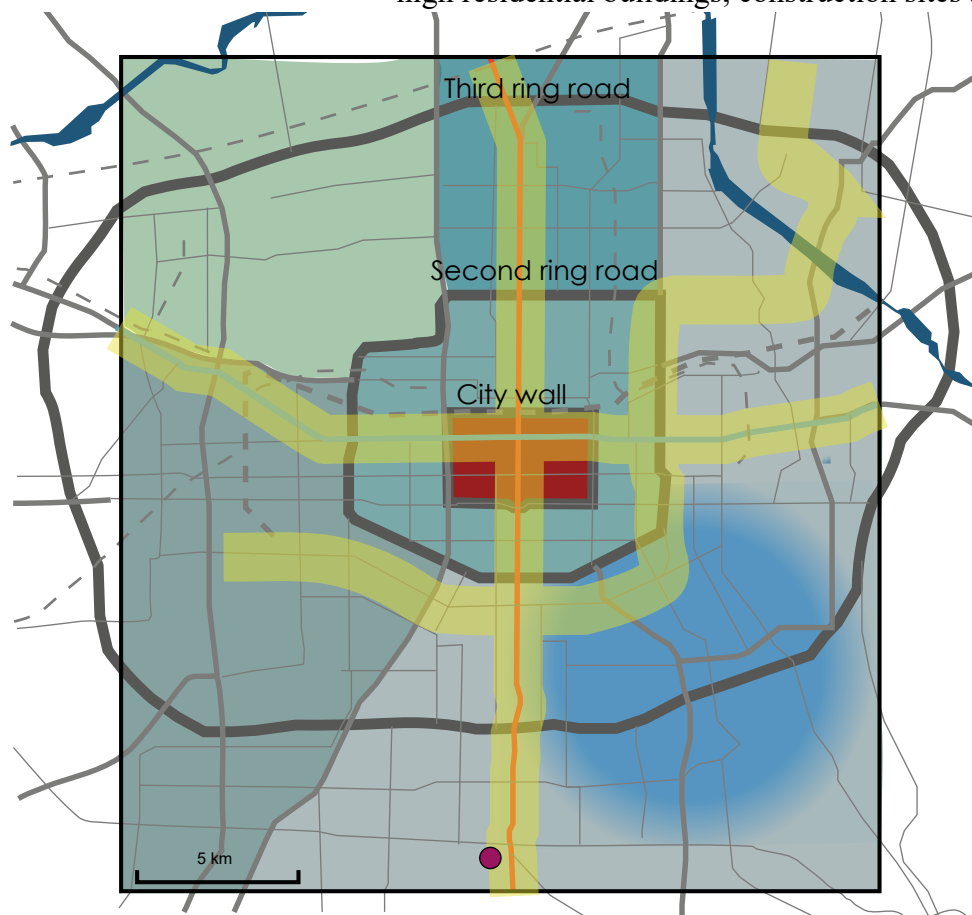
Urban centre: The space between the city walls and the 2nd ring road is well developed, dense and consist of residential areas and business. The buildings vary between new and old, high and low.

Subway zone: Dense and well-developed areas, often with high residential buildings and a multitude of businesses, even where the surroundings are mainly industries. Furthermore, there are construction sites along this zone, mainly in the outskirts of the area of interest.

Industrial area: This area consists to a large part of larger industries, landfills and occasionally high residential buildings, construction sites and

LEGEND

- Area of interest
- 2nd and 3rd Ringroad
- Main road
- Road
- - - Railway
- Yellow Subway districts
- Blue Qujiang New Distric
- Green Chang'an Heritage area
- Grey Industry areas
- Teal High profile development zone
- Red Historical center
- Light blue Urban center
- Light grey Residential area
- Location of Chang le



Map 3.1. The general zoning of the area of interest.

seemingly poorer suburban residential areas.

(Jaivin 2015).

Residential area: Area consisting of a multitude of different residential housing as well as construction sites for future residential housing. The already existing buildings vary from low and old to high and new meanwhile the ongoing constructions are exclusively high-rise buildings often in gated, high security areas. In these area, there are also many poorer areas being torn down to be replaced.

Chang'an Heritage Area: In the North-West corner of Xi'an is the historical site of Chang'an. Shaanxi Provincial Bureau (2013) explains that Chang'an was the capital during several dynasties, starting with the Han-dynasty and continuing for 800 years. It was a huge city complex for that time and is now regarded as the first metropolitan city of China. Today this area generally consists of rural ground and some neighbourhoods of lower housing.

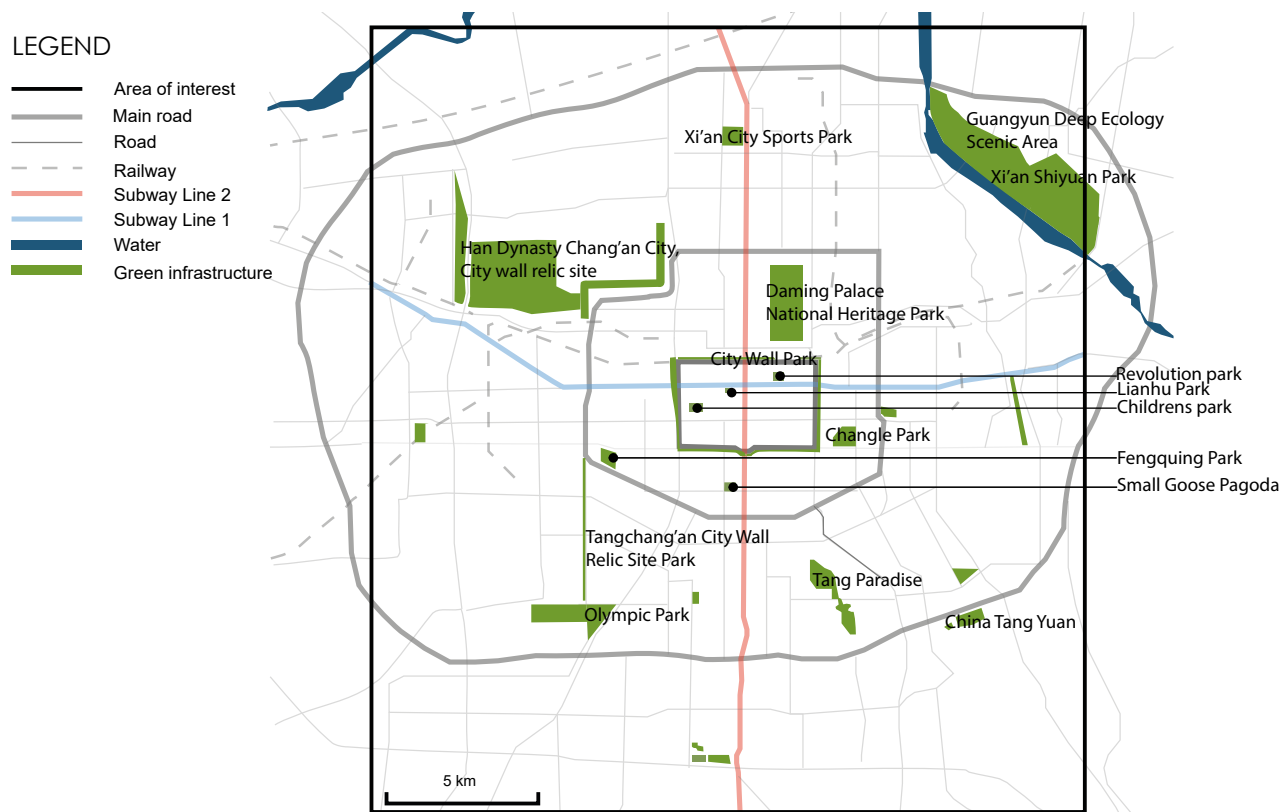
Qujiang New District: Another heritage area being highly developed. It is already a holder of some of the most important cultural sites in Xi'an which is planned to be highlighted further as well as complimented with contemporary cultural production, tourism and further residential sites

High Profile Development Zone: This area is located near the north railway station and is characterized by a multitude of gated high security, high rise buildings and ongoing constructions of similar neighbourhoods.

XI'ANS GREEN INFRASTRUCTURE

This section shows a brief overview of the green infrastructure of the area of interest in Xi'an. Xiu mentions (2017) that the ring road system in Xi'an causes a fragmentation of the green area. Seen on the Map 3.2, the green areas are not connected, instead they are dispersed, disconnected and even internally isolated. It is furthermore, in terms of quantity insufficient.

Further observations are that the small courtyards in the inner city often are entirely paved. When moving out from city centre, the courtyards increase in size and greenery. However, community parks are rare and generally located to the newly built, high security neighbourhoods.



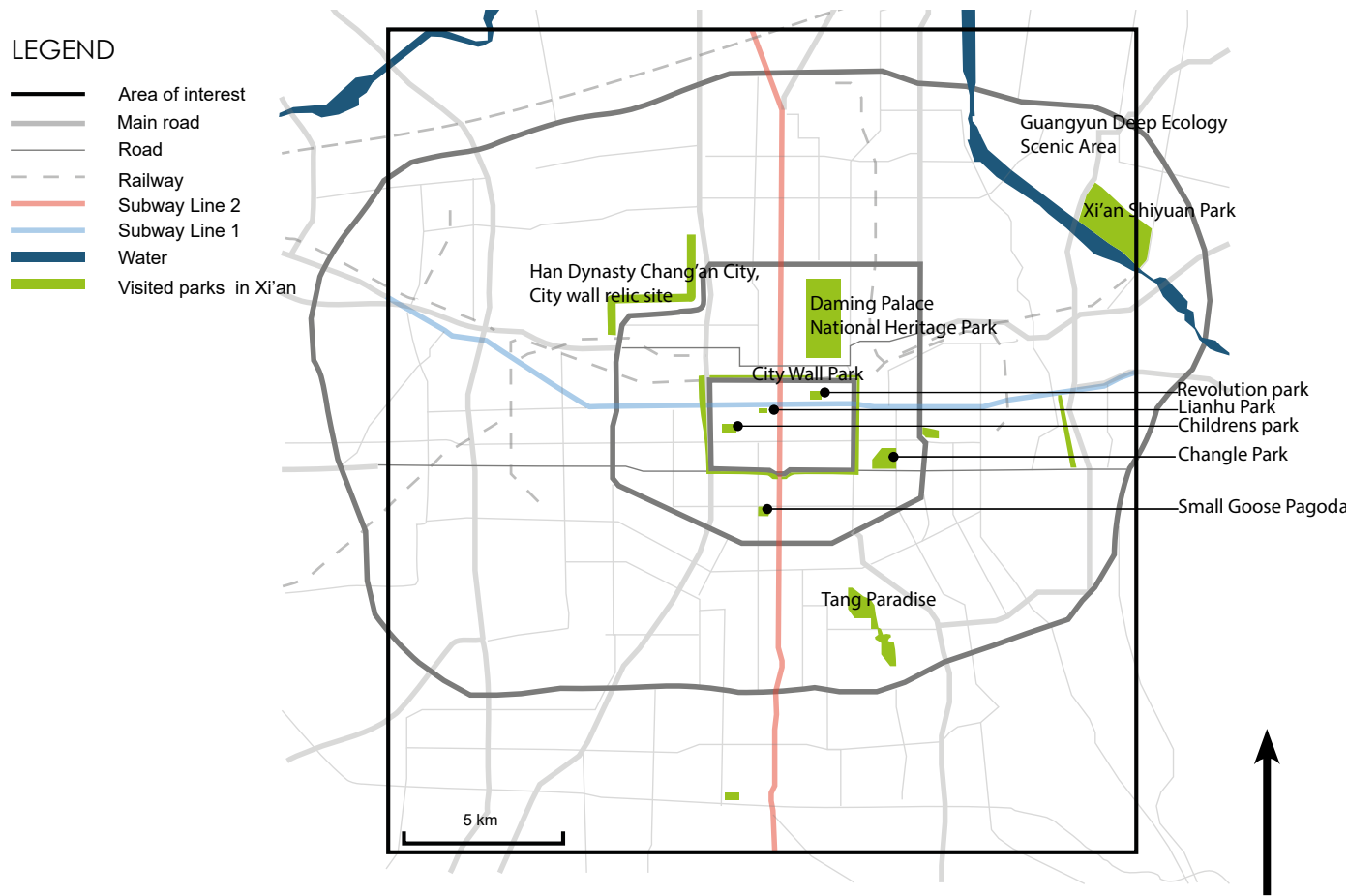
Map 3.2 Green infrastructure of Xi'an

INVENTORY OF PUBLIC PARKS

Map 3.3 Shows the public parks that was visited in search of public UA. No agricultural practice was observed in the visited city parks within the area of interest. However, in Xi'an Shiyuan Park, a plum grove was found. It was also common to see people pick weeds all over the cities, inclusive of the city parks. Clover and dandelions were also observed for sale at the vegetables markets.



Vegetable market where clovers and dandelions are being sold next to leek and cabbage.



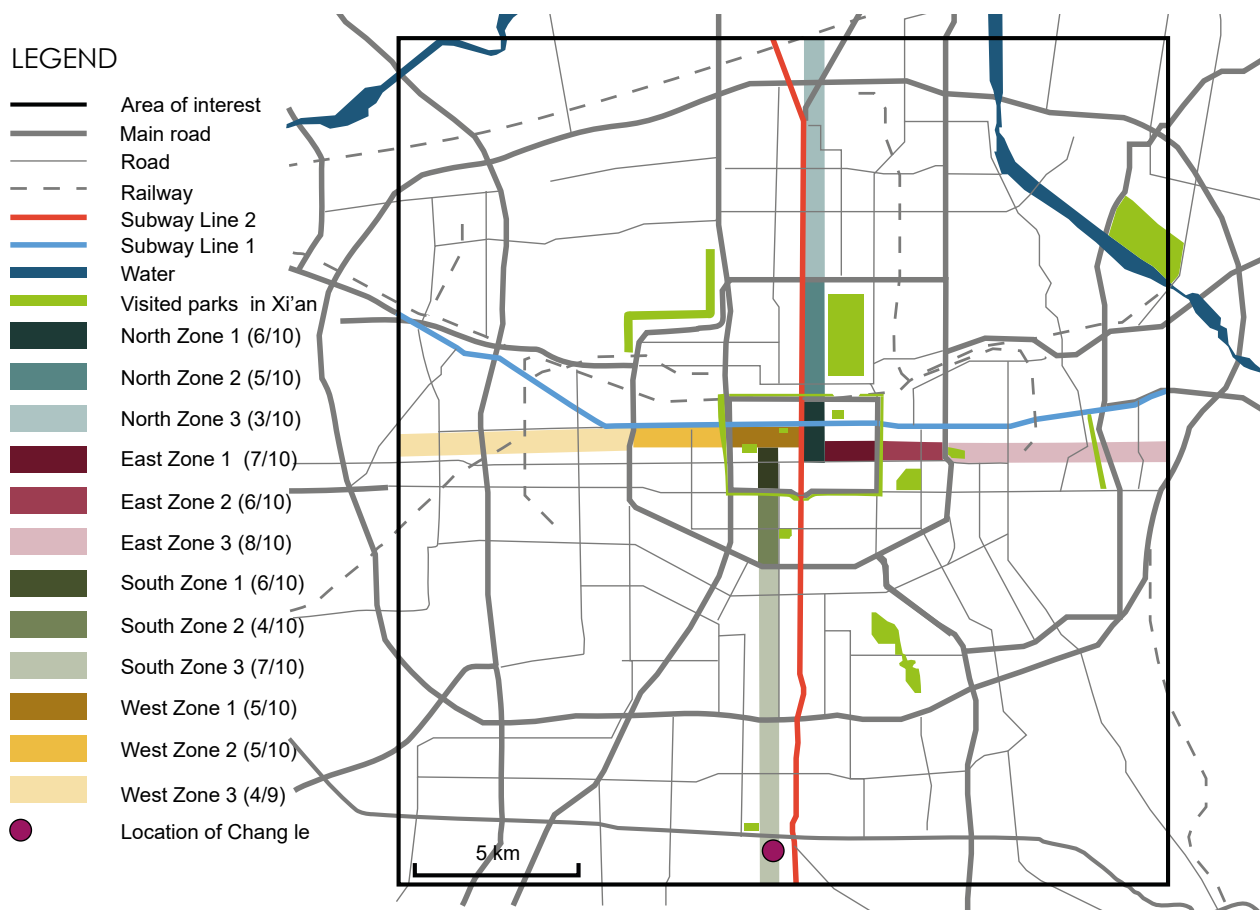
Map 3.3. Map showing visited parks in Xi'an within the area of interest.

CLUSTER SAMPLING OF URBAN AGRICULTURE IN XI'AN

Under this headline the inventory of UA interest and UA types, within the area of interest is presented.

Map 3.4 shows where the inventory took place and how the inventoried wedges were divided.

Furthermore, the numbers within the parenthesis after each zone name, indicate the number of visited communities containing edible plantations for instance onion or kale. All kinds of edible plantations on ground level, from pots to larger fields, regardless of extent, were included in the counting (See Definitions: Urban agriculture). Different kinds of edible plantations found within the communities is concluded on page 56. Edible plantations found outside of the communities are also presented on the same page. However, they were not included in the counting.



Map 3.4. Map over Xi'an showing zones for inventory of UA.

North zones

North Zone 1: (6/10) This zone consists to a large part of enclosed communities with lower housing placed in rows, with forecourts by the entrances. Some of the forecourts are used for agricultural plantations. However, many of the agricultural plantations in this zone were found in pots and in elevated plant beds

North Zone 2: (5/10) There is a big difference between the area closest to the metro line and the other north-south half of this zone. Near the metro, skyscrapers dominate with a lot of businesses and instances, there are few residential houses. Meanwhile, the other half mainly consist of a mix between enclosed communities with lower housing with small courtyards and enclosed communities with lower housing placed in rows, with forecourts by the entrances. Plantations in the forecourts were found, as plantations in pots and elevated plant beds.

North Zone 3: (3/10) A modern area mainly

consisting of newly constructed skyscrapers and also a lot of ongoing constructions. Almost every community is gated and guarded. The agriculture found in this zone was mainly located on the half closer to North Zone 2 in older buildings. The agricultural findings were furthermore modest in its extensions and limited to a few pots.



Gated communities and construction sites in North Zone 3.

East zones

East Zone 1: (7/10) This zone is old and densely built with relatively low housing. The communities are small. In general, they are built around L-shaped roads functioning as small courtyards, or they are built in rows parallel to each other with a small forecourt by the entrances. The forecourts were sometimes used for agricultural plantations but it was also very common to use it for mainly decorative plantations or not at all. Productive plantations in pots were the most common agricultural plantation.

East Zone 2: (6/10) A mix between the old and low houses seen in East Zone 1 and higher and more recently built buildings (skyscrapers where common) and construction sites for new but uninhabited skyscrapers. In this area, productive plantations in pots of various numbers and sizes were the only kind of plantations found.

East Zone 3 (8/10): This large zone was very diverse. Partly it consisted of relatively spacious neighbourhoods with low housing (approximately 7 floors) and forecourts that occasionally were used for agricultural practice, however, often they

did not seem to be used at all. Elevated plant beds used for agricultural practice, as pots, were also spotted. Furthermore, this zone contained dense and seemingly old and poor neighbourhoods with low housing where every surface possible to cultivate on was used for agricultural cultivations, also outside of the communities. Pots were also used. Additionally, large areas of seemingly wealthy, high security gated communities with skyscrapers and large courtyards were also common, unfortunately I could not enter these areas. One large vegetable field was found in between an area of high security skyscrapers and a seemingly poor neighbourhood that was partly being torn down.



Seemingly poor neighbourhood with lots of agriculture and a newly built high-rise area close by, East Zone 3.

South zones

South Zone 1: (6/10) Old and dense housing with lots of shops and restaurants in the bottom floors. In general, very dark communities. The agriculture found in this zone was mainly in pots but there was also one community found with forecourts used for decorative as productive plants.

South Zone 2: (4/10) This zone had a variety of communities; skyscrapers, old and dense communities with small courtyards or forecourts by the entrances and more suburban neighbourhoods with relatively low and spacious communities were found. Pots with agricultural plantations were most common but some forecourts with agricultural plants were also found.

South Zone 3: (7/10) Large communities and neighbourhoods consisting mainly of skyscrapers and enclosed communities with lower housing placed in rows, with forecourts by the entrances. Chang le, the chosen community for the

implementation of the design principles is located in this area. Some other places with productive cultivations in forecourts/small yards, were found, otherwise, the productive cultivations were mostly found in pots and elevated plant beds.



Neighbourhood in the city centre with forecourts with agricultural plants, South Zone 1.

West zones

West Zone 1: (5/10) This zone is very dense with dark narrow alleys. The communities mainly consist of enclosed streets and often, due a to a lack of space and light, it would not be possible to cultivate on them. Pots and elevated plant beds with agricultural plants were found in some places.

West Zone 2: (5/10) The communities found in this zone were diverse and consisted of skyscrapers, relatively new but low housing and enclosed communities with lower housing and courtyards or forecourts by the entrances. Agricultural plantations in pots, in forecourts and elevated flowerbeds was found in the communities of skyscrapers as in older and lower communities. Many communities could not be entered.

West Zone 3: (4/9) This area mainly consisted of gated communities that could not be entered, construction sites, uninhabited houses, industries and landfills. 10 inhabited communities possible to visit could not be found. The communities possible to visit were mainly, at least seemingly, really poor some sharing space with landfills and also, one area

in the outskirts of my area of interest with a variety of high, low, new and old communities. However, throughout this zone, comparatively few and minor productive cultivations were found, both inside the communities and on the public places. The once found were minor and mostly in pots. Some cultivations were made in elevated plant beds.



Large walls framing most streets in West Zone 3.

Conclusions of the Cluster Sampling of Urban Agriculture in Xi'an

UA was found common in Xi'an. 55% of the visited communities had productive cultivation of vegetables. Different kinds of UA were found. Below they are characterized and furthermore, sorted from most to least common.

1. Small scale community gardening, for instance Chang le: Within the communities it was most common to find edible plantations in pots. Second most common was to find edible plantations in elevated plant beds. Third most common was to find it in forecourts and least common on previous community lawns. It can be noted that most visited communities were entirely paved and lacked both elevated plant beds, forecourts and community lawns.

2. Small scale agricultural gardening on public space for instance on sidewalks and left-over space: This kind of gardening was most often seen in pots, elevated plant beds or on smaller fields of left over space.

3. Roof garden with edible plantations: Only one example was found. Simple, low production garden with plantations in pots. See interviews with Mrs Zhang and Mr Sun for more information.

4. Large scale fields in urban areas in East Zone Only one example of this was found in an area being developed at the time of visit, containing a mix of gated skyscrapers and a seemingly very poor and partly torn down neighbourhood.

Furthermore: Different kinds of kales, onions and lettuce were overrepresented in all of the above cases.



Small scale community gardening on previous lawns (1).



Small scale public gardening on left over space (2).



Roof garden with edible plantations in Xi'an city (3).



Small scale community gardening in pots (1).



Small scale cultivations in elevated plantbeds on a public street (2).



Large scale field in area surrounded by high-rise buildings (5).

SUMMARY OF INTERVIEWS WITH PROFESSIONALS

Below, the summaries of the interviews made with the academics within the field of landscape architecture/UA respectively the managers of the agricultural roof garden Kong Zhong Nong Chang are presented.

Summary of Interviews with Academics

Dr QIU explains how even though Xi'an is getting increasingly dense and even though this is a known fact for the people, the process of urbanization is strong, not least among farmers. The city is associated with wealth and high-class in contrary to farming which is associated with poverty. Meanwhile, developers want to maximize income efficiency and thereby buy land to build high buildings on. However, she continues to explain that there is an opposite trend as well. At the same time as people who are residing on the countryside wants to move to city, the urban residents, whom are becoming increasingly uncomfortable in the city, are dreaming about life in the suburb or in rural areas, some even of buying farmlands. She underlines that this applies to wealthy people as well whom are also experiencing issues with the high density and pollution in cities.

Dr YANG, in similarity, explains how China's rapid progress resulted in a lot of money but a lack of safe agricultural products. At the same time, most urban residents have a rural background since many of them immigrated from the countryside about 30-40 years ago. Now, the urban residents have an interest in leaving the city to be closer to nature where they can enjoy the fresh air, vegetables and fruits and rediscover childhood memories. This demand, as well as an increase of wealth, has given rise to agricultural demonstration parks since the year 2000. This kind of parks have become very popular in Xi'an and plenty exists in the city's extensions.

Dr ZHANG considers Xi'an city to be clearly distinct from the rural surroundings, with an apparent borderline. The relationship between the

two is the city's dependency on the countryside's food production as well as the supply of people, from the countryside to the city. However, he adds that there is a new trend amongst urban residents, they build vacation houses and gardens in the countryside. This is a problem since there is not enough land and therefore, the Chinese government try to regulate this.

Urban-Rural Relationship

According to all of the interviewed academics there is some kind of separation between the urban and the rural. Dr QIU experiences a distance between Xi'an and the agricultural countryside, sometimes in terms of geography and sometimes in people's minds and hearts. Furthermore, she continues to explain that the countryside lost its identity as a result of misinterpretations by the local governments of policies on how to develop the countryside. The policies were mistakenly interpreted as guidelines to remake the rural areas in an urban way, tear down old houses, build up high rise buildings and decrease the farmlands. Dr QIU underlines the importance of keeping the distinctive characteristics between the rural and the urban. However, she also explains that it is difficult due to the low status of the countryside. Now, there is only a few wealthy people who can afford to buy land and who at the same time want to move back to the countryside. The rest consider the countryside to be "low, dirty and not advanced".

Dr Yang on the other hand does not experience any separation between Xi'an city and the agricultural countryside other than geographical. He underlines the love people in China have for the countryside and claims that almost all urban residents want to have agricultural cultivations but, as Dr QIU also points out, only some have the land for it. He continues to explain that in China, farmers are the only ones who have agricultural plantations as they are, generally, the only owners of land. Furthermore, the few city-dwellers who do have land rarely have the knowledge, the technology nor the time.

Concerning geography Dr Yang clarifies that it should not take more than one hour to go outside of the city, he also adds that when it comes to the agricultural parks it is important to make sure people have information to be able to decide which

one they want to visit, as there are many different agricultural parks in Xi'an. However, even though everybody in China love the countryside, Dr Yang agrees with Dr Qiu, that the social status of farming has decreased although the conditions of agricultural life and work has become better. He mentions that about 80% of the Chinese population are farmers and underlines that most of them are poor. Even the farmers working at the agricultural parks does not have sufficient incomes. This has resulted in a general desire to educate oneself within the fields of for instance teaching or engineering. However, he adds that this might be different in ten years due to government initiatives.

Dr Zhang experience a separation between the colourful lifestyles within Xi'an city and the harder lifestyle on the countryside. Emotionally however, he does not experience any separation as many people spends time in both places. He continues explaining how life for agricultural practitioners on the countryside is all work. In urban areas however, few people have agricultural experience and even though he does not consider UA to be common in Xi'an, it is an arising trend. People in cities make high investment to create company-owned farms for food production. These new kind of farms, are more advanced and is a result of an ongoing development of the agricultural practice. It is mostly people that are above 50 years that invest in these sorts of

initiatives. They have money and a dream to go back to the agriculture and the countryside.

The Role and Vision of Urban Agriculture in Xi'an

Dr QIU explains that in China, where the space is very limited, there may be a need to adapt a multifunctional approach to the urban agricultural lands and include recreational values as well as values of production when deciding the purpose of the space. She suggests Yangling as an example where extensive UA is taking place and continues by stating that UA should be smaller than normal agriculture and also include advanced technologies and some kind of urbanity. Because of a high demand to be close to environments experienced as "nature", above all from urban residents, a lot of developers buy farmlands and build up pick-up gardens with fruits or berries combined with modern technologies. People go to these places with their friends to have fun. However, Dr Qiu still considers this question to not be prioritized enough, neither by the governors nor developers. Farmlands are most often transformed into commercial buildings and residential buildings since those are considered more profitable, a development she regards as unfortunate both for environment, logistics in traffic and social issues. According to her, UA should have a larger part in the city. Combining green houses or pick-up



Agricultural demonstration park

gardens with restaurants and canteens can be a way to do this, or by building agricultural demonstration areas. In any case, it should include interactional activities as it encourages people to get involved.

Dr Yang believes that agricultural parks should be built around the city of Xi'an. The main purpose of these, he explains, are not to provide food. Issues concerning food supplies and supplies of fresh vegetables have been solved which have resulted in a change of focus of the agricultural parks. Previously, focus was on the product, but these days they are more concerned with leisure. People want different things from the parks, some want to enjoy the fresh air or the flowers meanwhile another want to dig the soil or play in the park-surroundings. The agricultural park should inhabit all these parts and possibilities. Sometimes it is possible to have pieces of rent-out lands where people cultivate themselves. However, this can only be done around the city, within the city there is no space. Dr Yang does however suggest manufacturers to build platforms on top of buildings or have smaller facilities where people can cultivate inside of Xi'an. He does not know of any roof gardens in Xi'an and explains that roof gardens are complicated because of the load and irrigation system. Most older roofs cannot be cultivated on but new technology can be applied on

to new buildings.

Furthermore, Dr yang is positive concerning the future of China and the agricultural parks. There are problems with these parks, both concerning the product and the management but by gathering knowledge from other places in combination with the increased support from the government, it can be made much better.

Dr Zhang considers UA to be an important part of the city in the future because it may give young people residing in the urban area a chance to connect to nature. It can also regulate the temperature and help manage storm water. It does come with difficulties as well though. Urban residents have little energy and time to care for cultivations. Furthermore, the land is very expensive, people cannot afford to buy land or a place to practice agriculture. UA in the form of agricultural parks is a good idea as well as green roofs. He also suggests building green houses in urban sites and practice vertical horticulture. This could furthermore be combined with PV-panels (solar-panels) as well as places to work and live. Another of his ideas is that the government could design places where people can practice agriculture for free, today only rich people can afford this.



Agricultural demonstration park

Summary of Interviews with Managers of Kong Zhong Nong Chang Agricultural Garden

Mrs. Zhang Juan is the general manager and the investor of the roof garden Kong Zhong Nong Chang where she is now working full time. She was born and raised in Xi'an but on the countryside. Earlier, Mrs. Zhang was working with sales of construction material. The idea of starting a roof garden was founded in her personal interest of gardening and cultivation of vegetables and flowers. She travelled to the city Shenzhen in the south of China to do some research about this kind of initiatives. Mrs. Zhang has financed the roof garden entirely herself and the garden was opened in October 2016.

Mr. Sun Tao is a fulltime worker at the roof garden. He is the manager with responsibility over the finance and the division of labour. He is born and raised in Xi'an city. Furthermore, he is educated within the field of biology and had always wanted to work with something connected to his major meanwhile he found an interest in gardening. One dream was to start his own flower shop but then he found the position here at the roof garden where he has been working for about half a year.

Kong Zhong Nong Chang

Mrs. Zhang and Mr Sun explains that the garden is run as an inspirational project, as a show room, to

make people interested in UA and to contribute to the green infrastructure which is lacking in Xi'an. The majority of the vegetables at the roof garden are planted by the staff and the outcome is not big enough for commercial use. The harvest is normally just shared with their families and friends. However, some parts of the garden are rented to customers so the customers can use the roof garden and have their own plantations there, that is the commercial part. Anybody who is interested can do it. Normally it is people who live nearby who are interested and they usually bring their kids. Neither Mrs Zhang nor Mr. Sun could not see any additional pattern or relations between social factors and an interest in urban agriculture. Mrs. Zhang claims this interest to be completely depending on people's personal preferences and interests and is not related to neither income, age or other factors. Mr. Sun however believes that one reason why people practice UA is because buying vegetables can be very expensive.

UA is important to Mrs. Zhang because she wants a combination between the urban and the rural life. Furthermore, she means that, right now, in the city of Xi'an, a lot of the roofs are empty and should be used. She has got land in her ancestral home in the country side, but she does not want to cultivate in the countryside, but rather in the city. The roof garden is the result of that desire. Mr. Sun explains that, especially in the city, there is sometimes a food shortage meanwhile people prefer quantity instead of quality, people ignore the food security. He adds



Kong Zhong Nong Chang roof garden

that in the end, the most important thing is that we can all have organic food.

Additionally, Mrs Zhang have experienced a change in status for the agricultural life to the better. She explains that 10 years ago, people who lived in the countryside wanted to move to the city but today, most city dwellers admire the lifestyle in the countryside and want to return. She also explains that she has experienced a separation between the urban life and the agricultural countryside. She feels very far away from the countryside. Mrs Zhang believes this to be a result of the different lifestyles. Mr. Sun has not experienced this gap; however, he adds that his future children and their generation might lack a concept of the countryside.

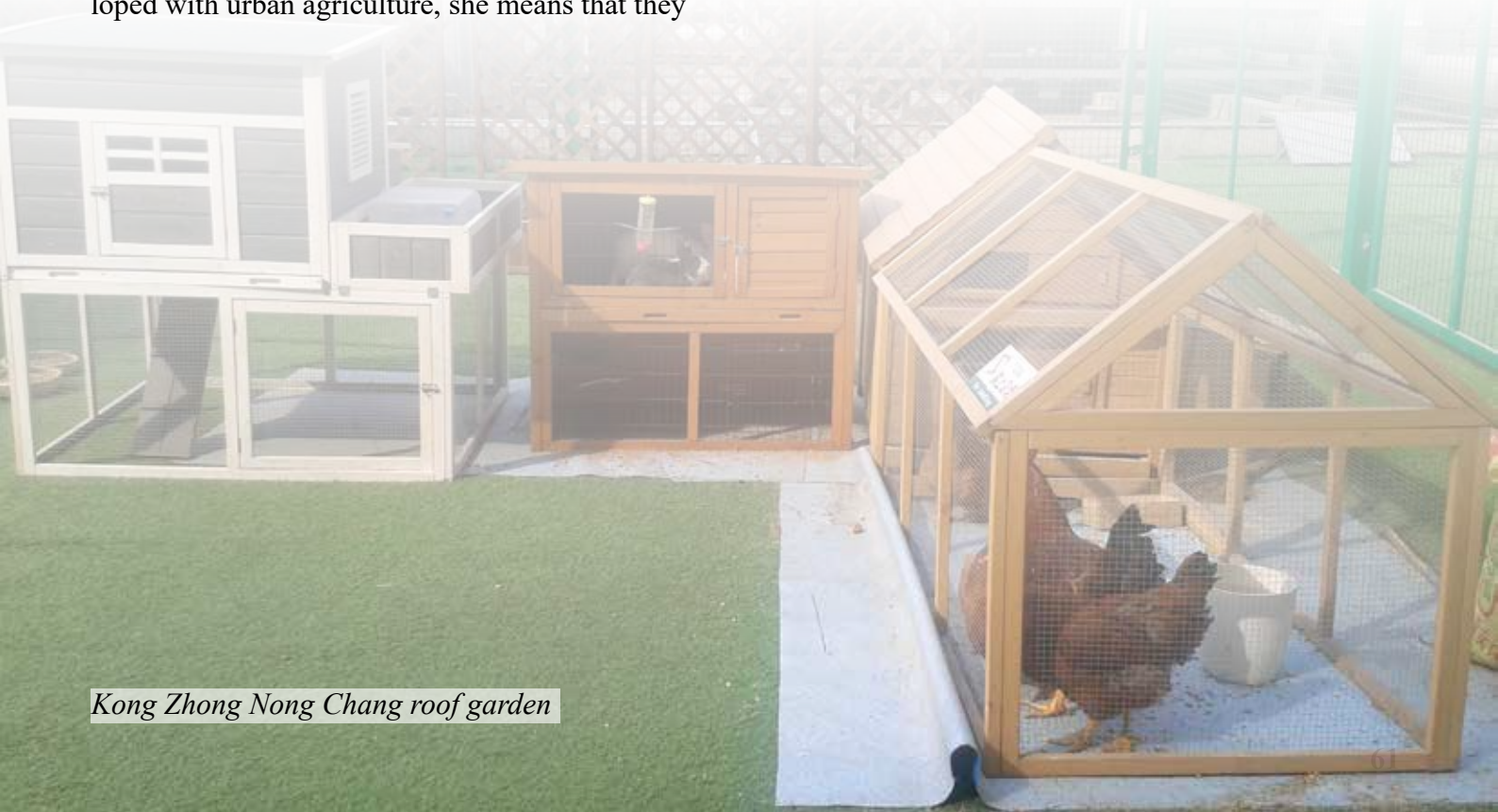
The Role and Vision of Urban Agriculture

Both Mrs. Zhang and Mr. Sun explains that in the city, people are living in a fast-paced lifestyle and everything is made of concrete and steel meanwhile the view of green areas and trees are rare, something that can contribute to people's stress. Mr. Sun also notes that Roof gardens are especially attractive in the cities where space is very limited and people want a place where they can grow vegetables.

Mrs. Zhang believes that UA should be combined with schools and with hospitals, to make them better. She does not believe that parks should be developed with urban agriculture, she means that they

already have enough vegetation and greenery. In addition to developing schools and hospitals, Mrs Zhang means that the roof garden is a contribution to encouraging and facilitating urban agriculture. They have taken the initiative and created the first agricultural roof garden in the province. She underlines that there is no other project like this in the city even though some companies and one museum have been inspired and created something similar, however, only for greenery, not for vegetables. Furthermore, she means that productive roof gardens have not really gained ground yet but it will. People are just learning and getting familiar with what it is and how they can do it themselves. The rest of her hope she puts in the government. She wishes that they will pay more attention to what she is doing and perhaps that they can establish a policy beneficial for this kind of projects, or even sponsoring. In addition, she hopes more people in general will pay more attention to their project and join them.

At last, Both Mrs. Zhang and Mr. Sun are positive for the future of UA in Xi'an. They believe it will increase in popularity and that it is going to be the trend for people living in the city, both for food security and for an improved life quality. They are already developing the roof garden by adding elements of leisure and entertainment. Mr. Sun also sees the roof garden as an opportunity for cultural exchange.



Kong Zhong Nong Chang roof garden

Design Principles Derived from Interviews with Professionals

All issues and concrete tips found in the interviews with the professionals, concerning the kind of UA this thesis is limited to, were remade into the design principles listed below. Advice concerning for instance vertical agriculture or other kind of high technology were not selected because it is outside the limitation of this thesis.

- Keep distinction between urban and rural farming².
- Multi-assessment of space. UA and recreation can co-exist ^{2,3}.
- Think smaller. Everything does not have to be highly profitable. The roof of Kong Zhong Nong Chang-garden was not prepared for agricultural practice. However, the most is made of most of the existing resources instead of wasting space for nothing ⁴.
- Use rooftops when it is possible ⁴.

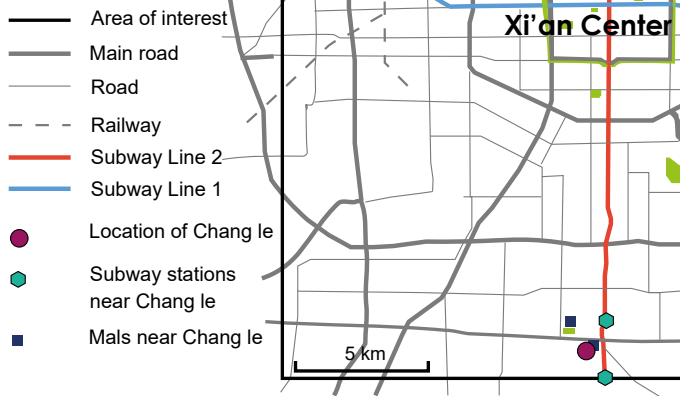
² Associate professor Dr. Qui Ling, Northwest A&F University, Yangling. Interview, 2017-02-20

³ Associate Professor Dr. Zhang Yong, Northwest A&F University, Yangling. Interview, 2017-04-10

⁴ Mrs. Zhang Juan. Manager at Kong Zhong Nong Chang roof garden. Interview, 2017-03-09

CHANG LE INVENTORY AND ANALYSIS

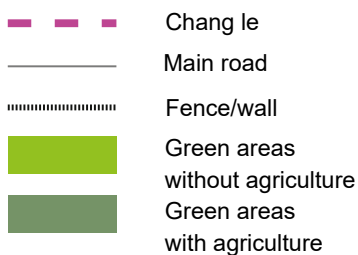
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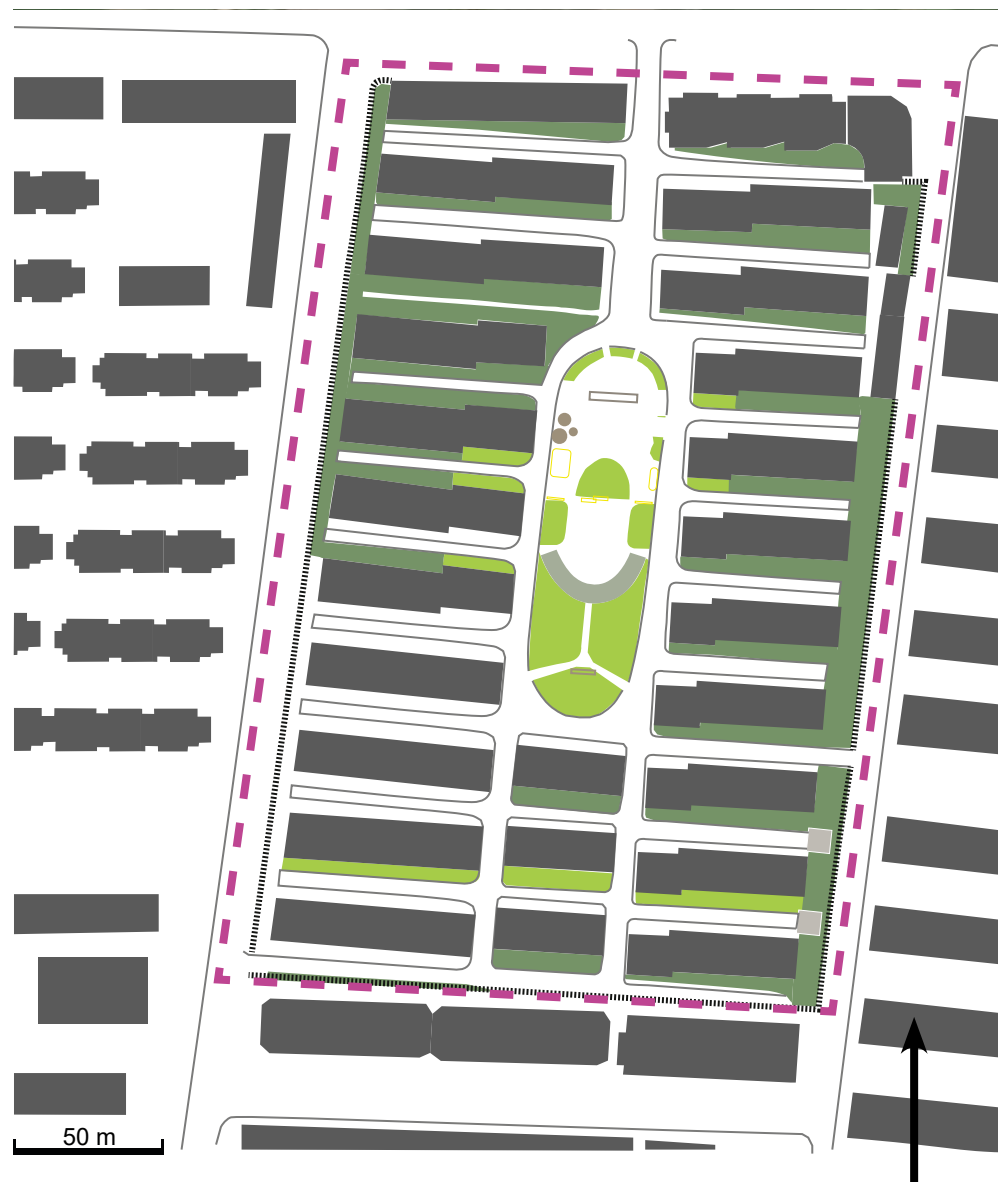
Map 3.6. Location of Chang le

Chang le is located in the southern parts of Xi'an (Map 3.6) in the district Chang'an. It is a 15 minutes' walk from the subway station "Space flight district". About 800 families and 3000 residents live in Chang le in total¹. Map 3.7 shows the disposition of Chang le and where in the community the lawns have been remade into plantations of agricultural crops.

LEGEND



Map 3.7. Disposition of Chang le and which green surfaces are used for agricultural practice.



VEGETATION

Agricultural crops identified in Chang le:

Diospyros discolor
Prunus persica
Prunus cerasus
Fragaria × ananassa
Allium ssp (Eg. Allium cepa L, Allium
ampeloprasum, Allium chinense, Allium
fistulosum, Allium sativum)
Lactuca sativa l
Spinacia oleracea
Brassica rapa subsp. chinensis
Brassica rapa subsp. pekinensis
Brassica oleracea var. alboglabra
Brassica napus

Vegetation identified in the community park:

Salix ssp.
Forsythia suspensa
Ligustrum ssp.
Buxus sinica
Pinus bungeana
Prunus serrulata
Juniperus ssp.
Wisteria sinensis
Cercis chinensis
Eriobotrya japonica
Ligustrum lucidum
Picea ssp
Trachycarpus fortunei
Amygdalus triloba
Euonymus japonicus
Pittosporum tobira



Vegetable field in Chang le

The lawns that were not used for cultivation were either very torn or mostly consisting of dandelions, clovers and other weeds. In addition, people in the neighbourhood of Chang le were collecting dandelions (*Taraxacum*) and clovers (*Trifolium*) from the lawns to use as food.



Residents of Chang le who are working the land.



Torn lawn in Chang le community park.



Pruned willows, paved ground material and public gym



Resident of Chang le picking weeds in the weed covered lawn.

LYNCH ANALYSIS

Districts: Chang le only consists of two types of districts, the housing area, and the park area. The housing area includes the houses, the small driveways, parking lots, occasional greenery and edible cultivations. Most people moving in these areas are only transporting themselves. The park area on the other hand, is a place where many people dwell. It is located in the middle of the housing area and consists of greenery, open space and various equipment for rest, play and exercise.

Paths: There are only three entrances in Chang le which create a very limited movement pattern. Of course, residents move to and from their own houses but when passing through the area there are only a few routes to choose from, all passing through or beside the public park.

Nodes: The park is determined to be the main node in the area with the pavilion, additionally confirmed during the observations, as the most active junction. The entrances are also clear nodes. People were seen relaxing by the entrances

Landmarks: Chang le mainly consists of houses in similar heights (Between 5-7 stores) and

appearances. Because of this, there are no clear landmarks within the area except for the pavilion which is determined to function as a landmark within and around the park. Outside but close nearby the neighbourhood there is one distinct high-rise building that makes it easier to navigate within Chang le.

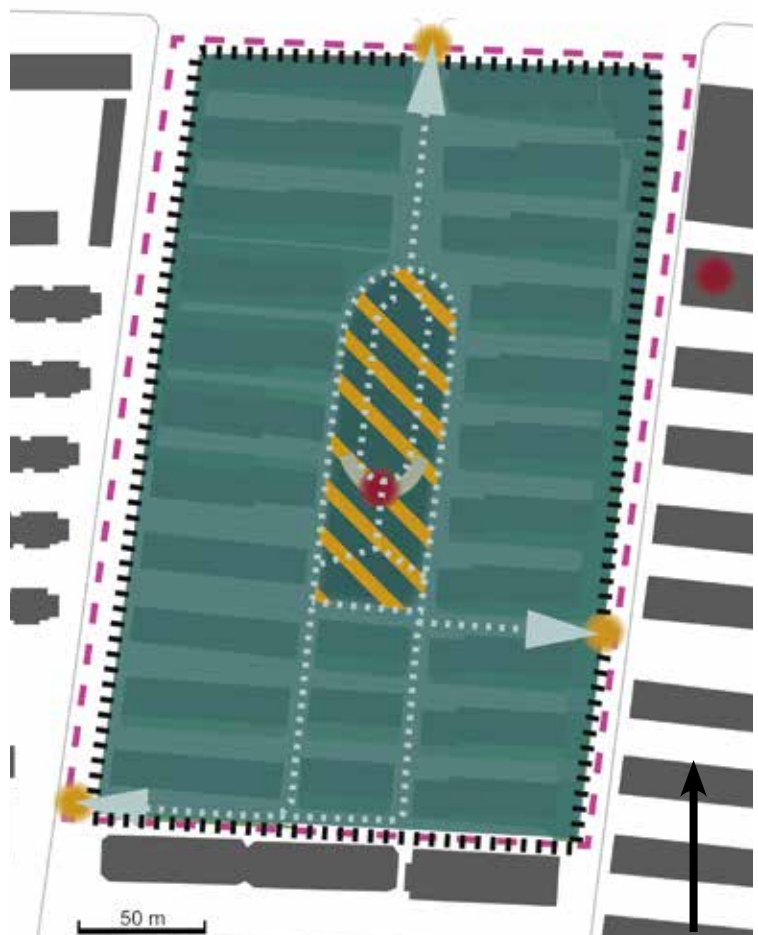
Edges: The neighbourhood is well demarcated towards the full public city life outside by walls and fences. Except for these walls and fences, there are no clear edges nor barriers. It is easy to move within Chang le but difficult to enter and leave the neighbourhood.

Conclusion

Chang le is a homogenous neighbourhood with few nodes and few landmarks. The park is the only node entirely located within the neighbourhood and contains the only landmark within the neighbourhood. It is for these reasons the park was perceived as most public, why it was also chosen for the implementation of the design principles.

LEGEND

- Chang le
- Main road
- ... Paths
- ▶ Exit/Entrance
- ||||| Edge
- ▨ Node and park area
- Housing areas
- Nodes
- Landmark



Lynch analysis showing the physical structures of Chang le.

SUMMARY OF INTERVIEWS WITH RESIDENTS OF CHANG LE

Below, a summary of the interviews with the residents of Chang le are presented. The summary is divided in three parts. The first part treats the opinions concerning agricultural and rural lifestyle and the urban-rural relationship. The second one, summarizes the interviewees opinions about the agricultural practice taking place in Chang le and the third part is a summary of the UA1 practitioner's explanations of their practice.

Views of Agricultural Life and the Urban-Rural Relationship

A majority of the interviewed had parents or grandparents who are or were farmers (18/20). Eight of the interviewees were interested in practicing UA in Chang le and all of them had an agricultural background. Both interviewees who neither had parents nor grandparents who are or were farmers had an undivided negative view of the UA practice in the neighbourhood. However, the other two interviewees who did not appreciate the agricultural practice did have agricultural ancestry, one of them even practiced UA in the neighbourhood himself.

When comparing urban lifestyle with agricultural and rural lifestyle the interviewees had similar

opinions. The majority mentioned the countryside as a calm place with good environment meanwhile the urban life was regarded as noisy, stressful and polluted. Some expressed a desire to live in the countryside but some also expressed that they wanted to live in the city. The urban lifestyle was often considered very convenient due to accessibility to facilities, well-functioning infrastructure and work. Furthermore, the city was considered as where the young people live and the rural areas were mentioned as backwards with bad living conditions. The following quotes are different opinions of urban and rural areas in comparison:

"In the countryside, there are only a few young people, most of them are elder or children. In the city, I can find my peers, people of my age. In terms of environment the countryside is much better than in the city and transportation there is getting better day by day."

"Life in the countryside is not as good as in the city, the living conditions are not as convenient as they are in the city but the environment is definitely better on the countryside. "

"In the past when I lived in the countryside I was really happy. I knew everybody, my neighbours around me. It was great. But now, living in the city I feel as if I am living in a prison, I feel isolated, I don't know anyone, people are just strangers. I feel so bored."

The last quote came from a man who felt very



separated from the agricultural countryside, he had been practicing agriculture himself for 20 years, until his village was demolished and rebuilt into skyscrapers. He also answered that he do experience a separation from the countryside:

“Yes, I think they are completely separated. In the past, we could have our own land, our own vegetables and food, but now in the city we have to pay for everything. In the past, we could have our own vegetables whenever we wanted, and it was free and organic, but now, everything costs money. I feel it is totally different.”

Four of the interviewees did experience a separation from the countryside. Most of the interviewees however, did not experience a separation between urban life and the countryside. Some answered that they have relatives and friends on the countryside that they visit often. Others meant that Chang le is near the countryside, so more rural surroundings are easy to reach. Moreover, some explained that Chang le has a very rural character itself due to the agricultural plantations. It was also stated that there is no difference between the rural and urban areas. Below, two different opinions on the subject are quoted:

“I feel like there is no separation to me because my hometown is not far away from where I live now so I can go back and visit my relatives on holidays.”

“It is the same, there is no separation. If I would go back to the countryside now, I would feel the same and live the same life.”

A majority of the interviewed (14/20) experienced a change of status of the agricultural countryside. Ten of these fourteen people experienced that the status had deteriorated. Economic reasons were the most common explanation mentioned for this deterioration. Furthermore, the government and the real estate industry were explicitly criticised. Several people claimed that farmers do not have land anymore. It was also stated that there are no young people in the countryside anymore. Below, two different opinions on the subject are quoted:

“Nowadays, less and less people, especially young people will not choose to practice agriculture in the countryside, they will choose to go to the

city to make money and a job. You cannot rely on agriculture to get money to support a family.”

“I think suitable lands for farming are getting less and less because the government want to build on the fields, on the other hand agriculture is getting more and more important for people who live in the city since everybody needs food.”

4 of the 14 people experiencing a change of status of the agricultural countryside, experienced this change as positive. Government policies and health concerns were mentioned as causes for this improvement. Below, is a positive view of the government interventions quoted:

“The policy for the rural area has improved the lifestyle of the rural people a lot and the government has paid more attention to the countryside so their living condition has been improving day by day.”

Views of Agricultural Practice in Chang le

Half of the interviewees (10/20) either practiced UA in Chang le or wanted to but did not have the space to do so. Three of the interviewees did practice agriculture in Chang le meanwhile seven wanted too. It was expressed that most of the people who practiced agriculture in Chang le were elders and had lived there for a long time.

Most interviewees had an undivided positive attitude towards the agricultural practice in Chang le (8/20) and meant that it provides with cheap and clean food, that it is good for the environment and that the practice gives exercise.

Six of the interviewees were ambivalent towards the agricultural practice in Chang le meanwhile two of the interviewees were indifferent. Positive aspects amongst the ambivalent people were for instance environmental benefits, economic benefits and a reconnection to a previous agricultural life. Some negative aspects mentioned by the ambivalent people were that the agricultural practice resulted in a privatization of public space, risk for pollution by fertilizers, risk for smell and untidiness.

Furthermore, the interviewees often proposed certain

terms limiting the agricultural practice. Such terms had to do with keeping the cultivations neat and tidy, that it was not expanded to the community park.

Four of the interviewees had an undivided negative attitude towards the practice of UA in Chang le. Their general idea was that it was supposed to be lawns or “greenery” on the places that is now cultivations. The agricultural plantations were not included in the concept of greenery. Only one interviewee of all the respondents expressed the opposite opinion, that also the productive cultivations are part of the greenery. Furthermore, the plantations were considered untidy and smelly.

Below are different opinions of the agricultural practice in Chang le listed:

“I think it is a really good thing to do it. First, it is good for the air, it is plants anyway. Also, if you want vegetables you just have to collect it from the field, you don’t have to pay for it and it is also organic and totally safe.”

“I think it is a good thing for people to do this but it is nice if they keep it tidy and neat. I think it is good for the environment and it is good for the people

who live here so they don’t have to buy vegetables from the market. Also, for the retired people it is kind of like exercise and entertainment, they do it for fun”

“It is really a disturbance to me and some other people who live here, because it is supposed to be greenery and lawns that looks nice for the people, when you see it you feel comfortable, but more and more people are doing plantations on the lawns. I think this is not nice.”

“I think there are two aspects. The bright sides are that some people here originates from the countryside and they want to keep the countryside lifestyle and the habits from before, partly by growing food, secondly it is a way to save some money, third is that I think this is kind of good for the environment. The negative sides I think are the fertilization, it could be a pollution and sometimes they smell. After all, in downtown you would never see this, this would never happen there...”

“I think it is not good to plant vegetables here in the neighbourhood because it is supposed to be greenery and lawns and it is public as well, people shouldn’t



Chang le community park

make it private. Additionally, the soil for lawns and greenery is quite different from the soil to plant vegetables, so I think if they really want to plant vegetables they can do it somewhere else, maybe in the countryside. However, most people who are doing the plantations here in the neighbourhood are elders. Because they are retired they have the time, and this is something they can do, also when they were young they used to live in the countryside so this is a part of their life, and sometimes they offer me vegetables. I don't think it bothers my life."

Urban Agricultural Practice in Chang le

The practitioners of agriculture in Chang le who were interviewed answered that the reason for their practice is that it is time saving, that it looks nice, that it is fun, and for food safety.

Water used for cleaning vegetables was later used to water the agricultural plantations. Pesticides had been used. Complaints were made on the soil and on the light conditions. However, one of the respondent thought both light and soil was good in Chang le.

Conclusion

Most interviewees had family on the countryside. Many had positive associations of the countryside such as good environment and relaxations however, the countryside was also associated with bad infrastructure and poor living conditions. The city was often considered as polluted and stressful at the same time as it was considered convenient in terms of facilities and as where the jobs and young people are. The interviewees had a general opinion of being well connected with the rural area but the interviewees who did not agree, had a strong aversion of the perceived separation. Furthermore, the general opinion was that agriculture is very important in China but it is not as popular as it used to be as it is difficult to provide oneself on farming today meanwhile the farmers are losing their lands.

A lot of different opinions about the agricultural practice taking place in Chang le were expressed during the interviews, often from the same interviewee. The conclusion of the section Views

of Agricultural Practice in Chang le is therefore presented as lists of all positive and negative aspects as well as certain terms mentioned.

Positive aspects mentioned:

- It looks nice
- Sharing of vegetables
- Good for the environment
- Economic
- Timesaving
- Provides with safe/clean/organic/high quality food
- It is a part of the greenery
- Exercise/entertainment
- A way to keep the countryside lifestyle in the city
- To have one owns vegetables

Negative aspects mentioned:

- Messy/untidy/not neat/not nice
- Smelly fertilizers
- Preferring the intended lawns/"greenery"
- Fertilizers being pollutants
- Privatization of public space
- Bad soil

Terms for the agriculture in Chang le mentioned:

- It is OK as long as they keep it neat/tidy
- It is OK on the side of the houses
- The management should regulate it to keep it as tidy as possible

Design Principles Derived From Interviews With Residents of Chang le

All negative aspects mentioned by the residents of Chang le were addressed as the below listed design principles below:

- Keep distinction between urban agricultural and rural to meet the opinions of the people underlining that "this is not fields and was never supposed to be".
- Use edible crops in the same way as non-productive crops is used in conventional parks, as building blocks.
- Clarify "Public" through the design, public space must not be privatized.

- Use low maintenance crops and plants to avoid decay if interest is low
- Use crops resistant to wear and tear of children's play
- Use good soil
- Deal with smell from fertilizers if possible.
- Regulate run-off water to make sure fertilizers and pesticides does not cause pollution (Special policies must compliment the physical measures to help promote ecological farming and reduce usage of hazardous substances).



Vegetable field in Chang le

OBSERVATIONS OF THE COMMUNITY PARK

The results from the observation of the community park of Chang le are presented below. First the physical conditions are presented, second how people choose to pass by the park and third the usage of the park.

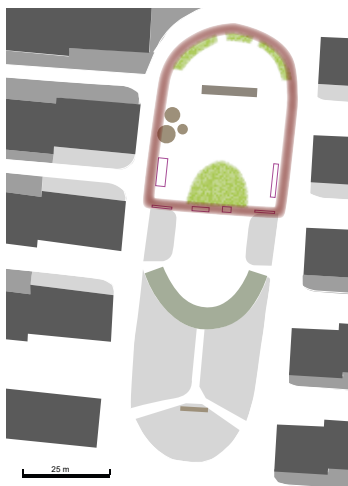
Observations of Physical Conditions

All of the sites were observed to be bright during the days. In the mornings and evenings, the houses

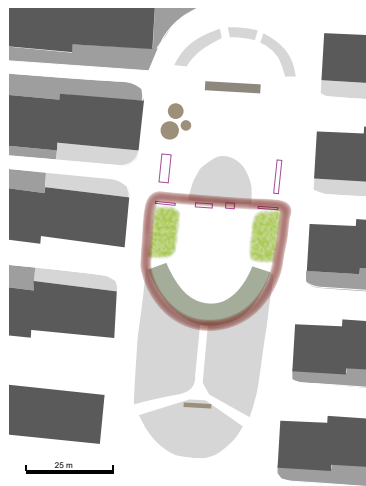
in east respectively in the west shade parts of the whole park. Site 2 includes a pergola that provides shade all day and Site 3 have few trees which also provide constant but broken shadow throughout the day. All of the sites in the park were noted to be less windy than outside the neighbourhood. It is a protected area in terms of wind. Constant bird song was heard in all of the park. Sounds from children and other people spending time in the park or beside the park were also detected. At times, independently of the site, noise from surrounding construction sites was heard. During the visited evenings, the whole park smelled like blossom. Site 1 smelled of food at one occasion and site 3 was at one occasion noted to smell like soil.



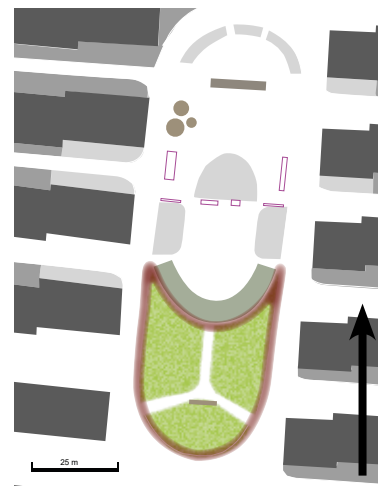
Site 1



Site 2

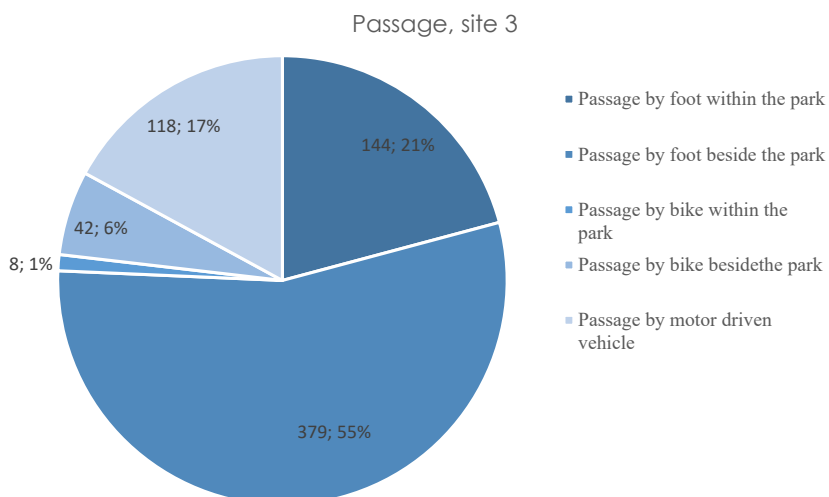
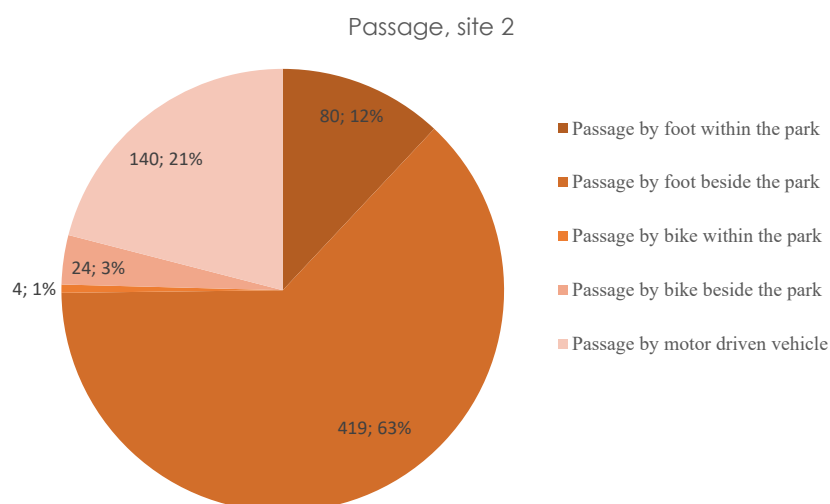
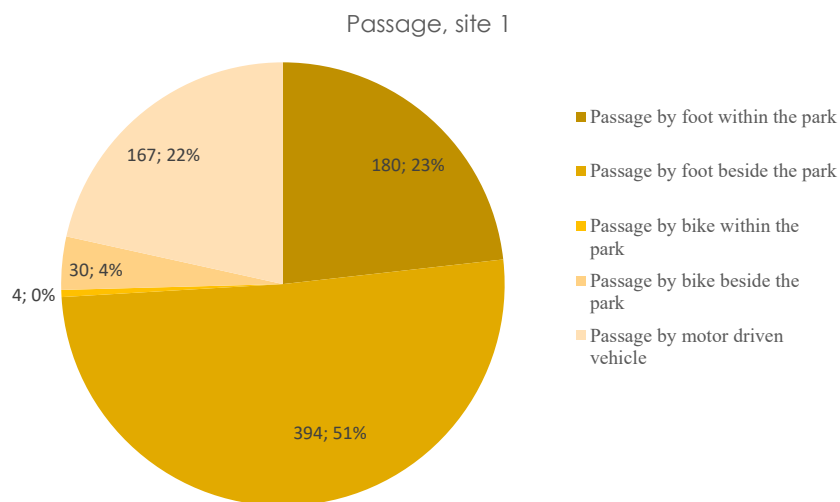


Site 3



Observations of How People Pass the Park

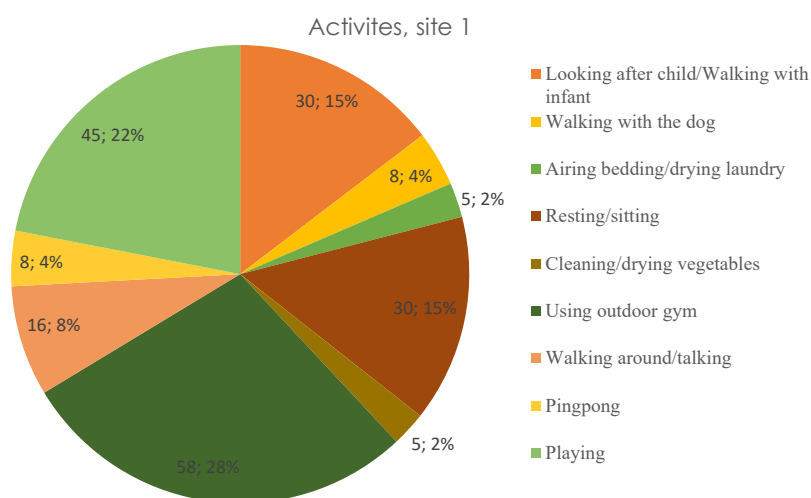
Residents in Chang le as well as by-passers preferred to move beside the park instead of through it, despite the high amount of motor driven vehicles in a high speed sharing the space on the sides. Specially on site 2, people chose not to pass through but move beside the park instead, possibly taking a short cut on the other parts of the park instead.



Observation of the Usage

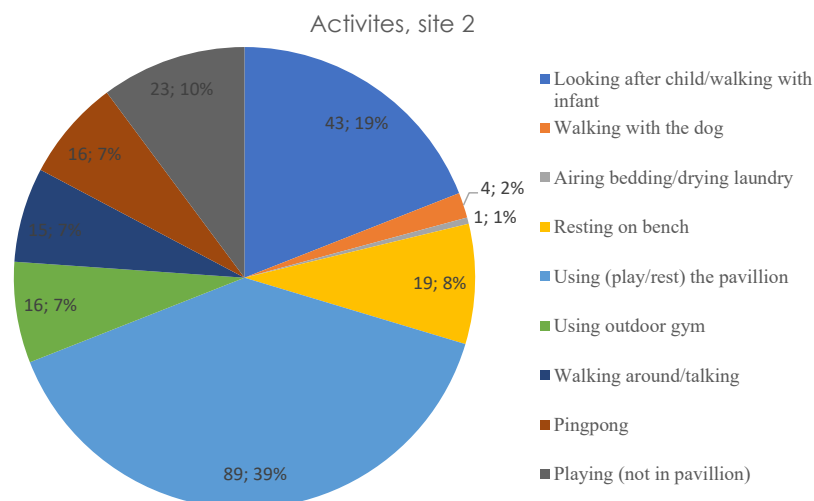
Activities, site 1

Using the outdoor gym was the most popular way to occupy oneself on site 1. The gym was however mainly used for play or as furniture to sit on. This applies to the rest of the equipment on site 1 as well. The ping pong-tables were also used to clean and dry vegetables. Children used site 1 as a space to play independently of the park equipment but kept to the sides of the park. The empty space in the middle was barely used, only a few times for free play and football. Furthermore, this was a popular place to walk around.



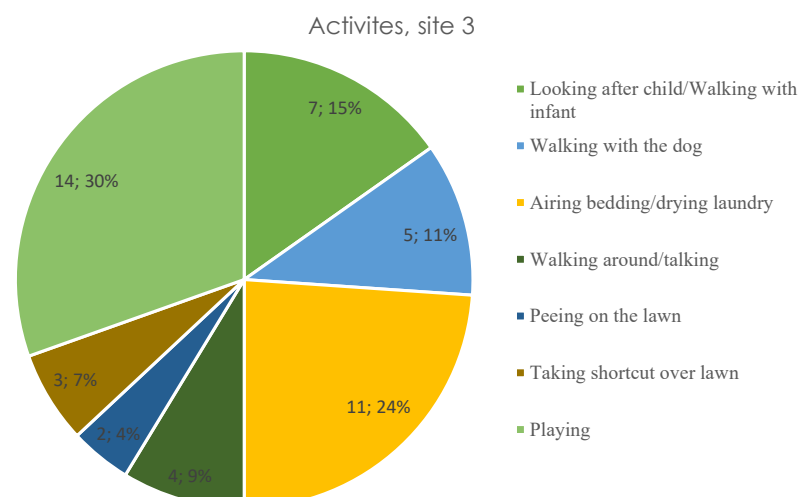
Activities, site 2

Even though the smallest share of people passed through site 2 it was the most popular site to dwell in of all the three sites. The equipment on the site were well used. The pavilion was the most popular place in all of the park, both for rest and play. Here, it was also very popular to play ping pong, to rest on the benches outside of the pavilion, free play and watching kids or walking around with baby car. The outdoor gym was also well used.



Activities, site 3

Few people used this part of the park. Most people moving in this area were only passing by. At one occasion, many children were playing there. Airing bedding/drying the laundry was a common activity.



Conclusions of the Observations


Site 1 and 2 were actively used for various purposes and seemed highly appreciated. The most used place in all of the park was the pavillion providing with shade and places to sit. Other equipment in the park were also very well used. More shady places to sit is needed. Site 3 was barely used in comparison to the other parts. It was mainly functioning as a passage to the other parts of the park and a place to air the bedding. For this reason, site 3 of the Chang le neighbourhood park was chosen as an object for the implementation of the design principles, leaving the used sites as they are. Site 3 is the place with most hours of shadow in the park, but is, despite this, still a light and mainly sunny area. It consists of torn lawns and shrubs.

Many cars constantly passed by the park in a high speed.

Design Principles from Observations

Issues concerning the use of the community park that became clear during the observations, contributed to the design principles with one principle:

- Use crops resistant to wear and tear of childrens play

A background photograph of a dining table with several white bowls and wooden chopsticks. The scene is brightly lit, with strong shadows cast across the wooden table surface. In the foreground, a large white bowl is prominent. In the background, other bowls and chopsticks are visible, suggesting a communal meal. The text is overlaid on this image.

INTRODUCTION

THEORY

FIELD STUDY

RESULTS

Under results, the design principles, the implementation of the design principles, the discussion and conclusions are presented.

DESIGN PRINCIPLES

The design principles are divided into two parts. *Design Principles: Part 1* aims to give aesthetic guidelines when designing in a Chinese context and when being foreign to this context. *Design Principles: Part 1* only provides with an aesthetical skeleton and is therefore further complemented with *Design Principles Part 2*, partially developed through dialogue with Shaanxi and Xi'an locals (See: Methodology, Interviews). *Design Principles: Part 2* aims to provide with organizational guidelines when working with UA in a Xi'an Neighbourhood.

The Design Principles are not absolute. They are guidelines that must be adapted to the specific context where they will be used.

Both parts of the design principles are later exemplified in a more concrete manner under *Conceptual Design*.

PART 1: IN COMMON, YU'S PARKS AND THE CLASSICAL GARDENS

The Comparative Study of the Classical Gardens and the Parks by Kongjian Yu resulted in the *Design Principles: Part 1*. Part 1 is listed below:

- Enclose and limit the sightlines out from the park-area
- Create borrowed views by limiting the sightlines within the park to enhance sceneries.
- Vary darker and lighter parties to create a more dramatic experience and further illusions of more space.
- Include water
- Use organic shapes
- Include recurrent built elements contrasting the green surroundings

PART 2: PRINCIPLES FOR URBAN AGRICULTURE IN XI'AN

Several different methods contributed to *The Design Principles: Part 2*. The different methods were the *Study of Theory*, *Interviews* and the *Observational Studies of Activities and Physical Conditions*. From the *Study of Theory*, generally valid principles could be extracted. An example of these generally valid principles is the principle to use native plants. Through the interviews with the professionals more specific principles for Xi'an could be defined meanwhile the interviews with the residents of Chang le and the *Observational Studies of Activities and Physical Conditions* of the community park in Chang le provided with site specific principles. Similar principles derived from different methods were reformulated as one principle.

The Design Principles: Part 2 addresses the organizational issues surrounding establishment or development of urban agriculture. Part 2 is listed below:

- Adapt the developments of UA to the specific community and their users (Smit and Bailkey 2006).
- Inclusion of various users, managers and stakeholders in the process of integrating agriculture in the urban landscape (Mubvami and Mushamba 2006).
- Unused lawns can be used for alternative purposes (Ignatieva et al 2016), e.g. agriculture.
- Use edible crops in the same way as non productive crops is used in conventional parks, as building blocks.
- Make sure the ground/soil/water for irrigation being used is clean without high heavy metal contents, parasites and other pollutants (Buechler et al 2006; Kessler 2013).
- Keep it tidy
- Decrease need for pesticides by design (Thrupp 2009).
- Decrease need for chemical fertilizers by design (Thrupp 2009).
- Integrate UA with management of organic waste (Mubvami and Mushamba 2006).
- Use native plants (Yang 2017).
- Keep distinction between urban and rural farming².
- Multi-assessment of space. UA and recreation can co-exist^{2,3}.
- Think smaller. Everything does not have to be highly profitable.
- Use rooftops when it is possible⁴.
- Clarify "Public" through the design, public space must not be privatized.
- Use low maintenance crops and plants to avoid decay if interest is low.
- Use crops resistant to wear and tear of children's play.
- Deal with smell from fertilizers if possible.
- Regulate run-off water to make sure fertilizers and pesticides does not cause pollution

². Associate professor Dr. Qui Ling, Northwest A&F University, Yangling. Interview, 2017-02-20

³. Associate Professor Dr. Zhang Yong, Northwest A&F University, Yangling. Interview, 2017-04-10

⁴. Mrs. Zhang Juan. Manager at Kong Zhong Nong Chang roof garden. Interview, 2017-03-09

CONCEPTUAL DESIGN

The conceptual design was made with the design principles as a base. The idea was to create a park area including edible plantations, visually separated from the surroundings. On the coming pages, the way each design principle has been implemented, will be explained.

One larger intervention was made which cannot be

connected to the design principles. This intervention was to enlarge the areas southern corners. This was partly made to create more space for the park and partly to decrease the speed of the cars passing by.

Other interventions made that has nothing to do with the design principles was to use willows to connect this park area with the rest of the parks willows and to keep the higher vegetation concentrated to the north to avoid unnesecary shadow during the day.



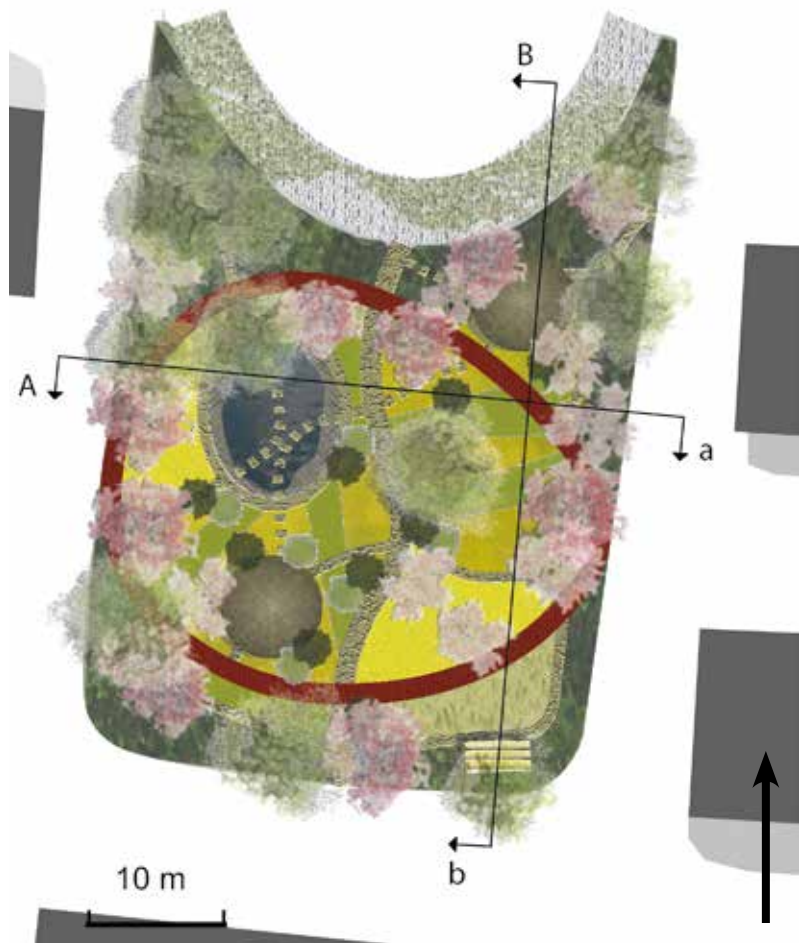
Section A-a. Shows the park area across the dam and various fields.



Section B-b. Shows the park area across pavilions, various fields and compost.

LEGEND

-  Plant; Ca. 1m high
Eg. Brassica ssp.
-  Plant; Ca. 0.5m high
Eg. Allium ssp.
-  Grain; Ca. 1.5 m high
Eg. Triticum ssp.
-  Plant; Ca. 2.5 m high
Eg. Helianthus ssp.
-  Bushes
-  Dam
-  Road
-  Road in red decking
-  Path
-  Stepping stones
-  Pavillion
-  Compost
-  Willow
-  Fruit tree



Plan showing the conceptual design.

Implementation of Design Principles: Part 1

In this section, the implementation of the *Design Principles: Part 1* is presented.

Enclose and limit the sightlines out from the park-area:

out from the park-area: The walls in the agricultural area of the park is done by using vegetation. The high vegetation, such as trees, higher bushes as well as higher crops is mainly located to the marginals of the park meanwhile lower vegetation rules the centre. However, the placements of trees are further effected by the ambition of keeping the park light.

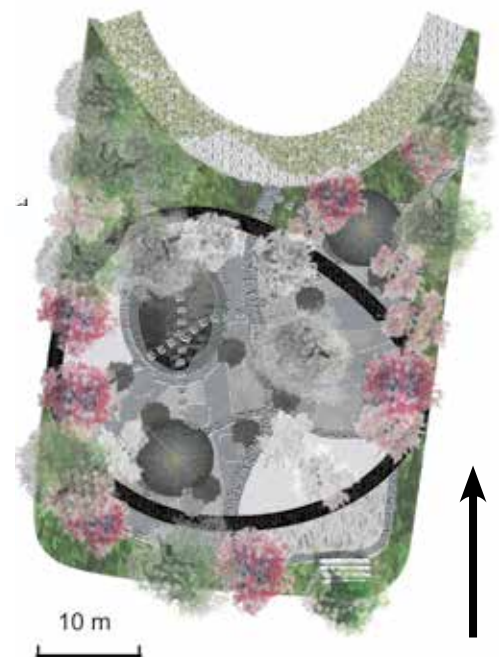
LEGEND



Framing elements



Elements being framed



Create borrowed views by limiting the sightlines within the park to enhance sceneries. This is made by using plant material. Borrowed views are created mainly between the built elements (dam and pavilions) and from the entrances towards the built elements. Furthermore, no paths follow straight, continuous sightlines.

LEGEND



Obscuring areas higher than 2m



Partly obscuring objects higher than 2m.



Obscuring objects higher than 2m



Low built object



Partly obscuring built objects



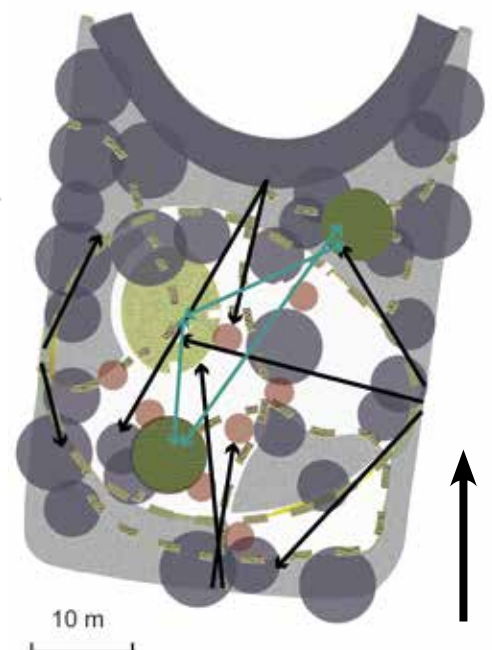
Sightlines from entrances



Sightlines between built objects

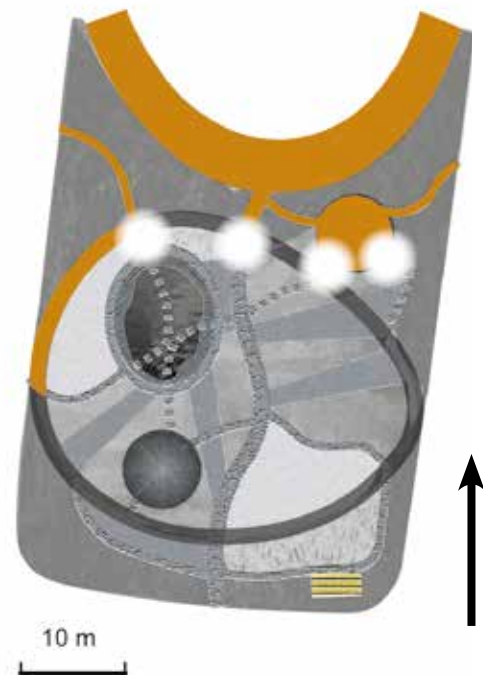


Way of paths



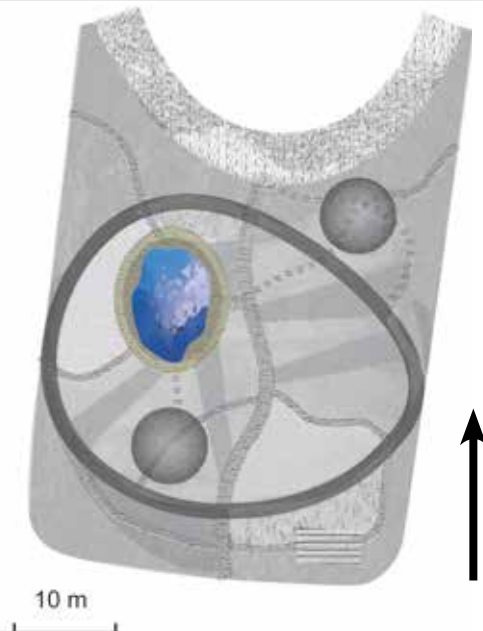
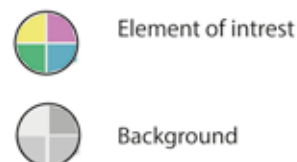
Vary darker and lighter parties for further illusions of more space: Narrow paths of higher bushes/crops are used to imitate the corridors in the traditional gardens. This is done mainly in the entrances to the park, and in the northwest corner where vegetation is higher.

LEGEND



Include water: The low point in the middle will be made into a temporary dam, taking care of water run-off when possible and other times being dry.

LEGEND



Use organic shapes: Built objects and paths has organic shapes as the fields framed by the paths. The exception is the smaller parts of fields which are more geometrical to imitate the shape of conventional agricultural fields.

LEGEND



Include recurrent built elements contrasting the green surroundings

This is implemented by building a dark red decked road, circulating the park area. Furthermore are two pavilions added.

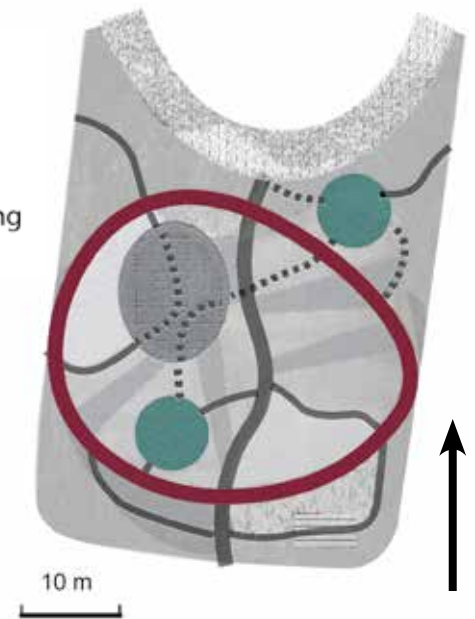
LEGEND



Pavillions



Road in red decking



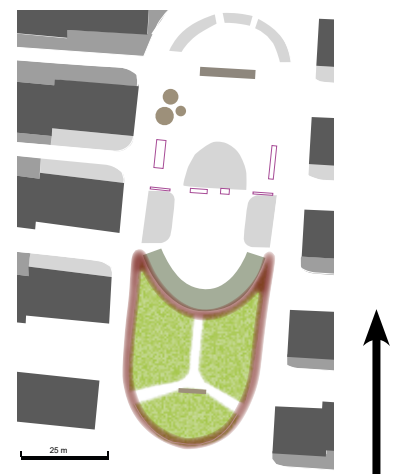
Implemenetation of Design Principles: Part 2

In this section, the implementation of the Design Principles: Part 2 is presented.

Adapt the developments of UA to the specific community and their users and Inclusion of various users, managers and stakeholders in the process of integrating agriculture in the urban landscape were the first two principles to be used in this work when trying to understand China, Xi'an and Chang le through various studies made during this thesis, resulting in the Design Principles. Specifically concerning Chang le, inclusion of residents was achieved by interviews, of which contributed to the Design Principles. The managers of Chang le were invited to be interviewed but declined. No private enterprises were found in Chang le.

Unused lawns can be used for alternative purposes, e.g. agriculture: Site 3 of the community park, the object of redesign, mainly consist of very torn lawns, rarely being used.

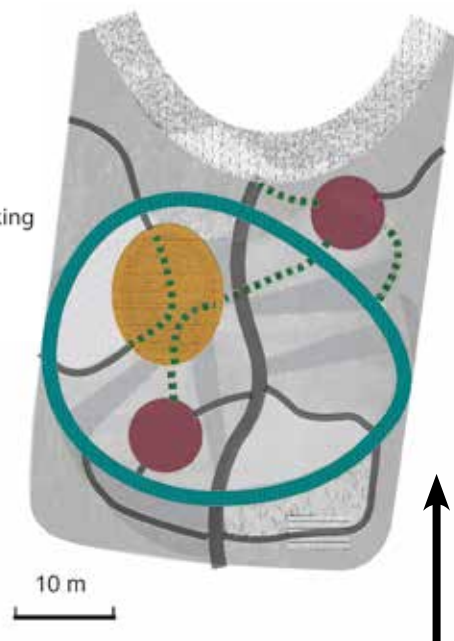
Think smaller. Everything does not have to be highly profitable. This concept does not aim to provide everyone in Chang le with food but instead with cultural and recreational values.



Keep distinction between urban and rural farming and Clarify "Public" through the design, public space must not be privatized, by adapting two other principles; **Multi-assessment of space. UA and recreation can coexist and Use edible crops in the same way as non productive crops is used in conventional parks, as building blocks.** The urban character of the neighbourhood park is preserved by mixing productive plantations with obvious recreational elements as well as creating rooms within the park using crops, in similarity with the usage of non-productive plantations in conventional parks. By mixing possibilities for agricultural practice with the recreational possibilities for strolling in a varied environment or relaxing in the shade of the pavilions (which were concluded to be of interest of the people in Chang le during the observations) the public status of the park is also underlined.

LEGEND

- Pavilions
- Dam
- Road in red decking
- Stepping stones

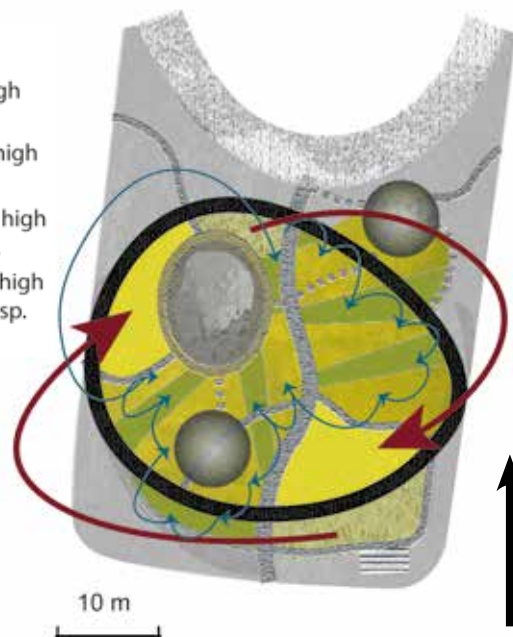


Decrease need for pesticides by design.

By practicing agricultural rotation (Thrupp 2009) between the lower fields, (0.5m -1m) and between the higher fields (1.5m-2.5m) the need for pesticides is decreased meanwhile the character of the park is preserved. Another way to decrease the need for pesticides used in this concept, is multi cropping. When choosing vegetables and crops, neighbouring species should be sensitive for different pests. Multi-cropping kale and onions is one example of that (Thrupp 2009; Gaba et al 2015; Asare-Bediako et al 2010).

LEGEND

- Plant; Ca. 1m high
Eg. Brassica ssp.
- Plant; Ca. 0.5m high
Eg. Allium ssp.
- Grain; Ca. 1.5 m high
Eg. Triticum ssp.
- Plant; Ca. 2.5 m high
Eg. Helianthus ssp.








Make sure the ground/soil/water for irrigation being used is clean without high heavy metal contents, parasites and other pollutants and Keep it tidy. Included in the design are raised plant beds. If necessary, these can be sealed from the ground and filled with clean soil (Kessler 2013). Using raised plant beds also keeps it tidier. Water for irrigation is a very important issue but is not addressed further in this thesis due to its complexity. There are no simple solutions (Buechler et al 2006) and the solutions found were not related to landscape design.

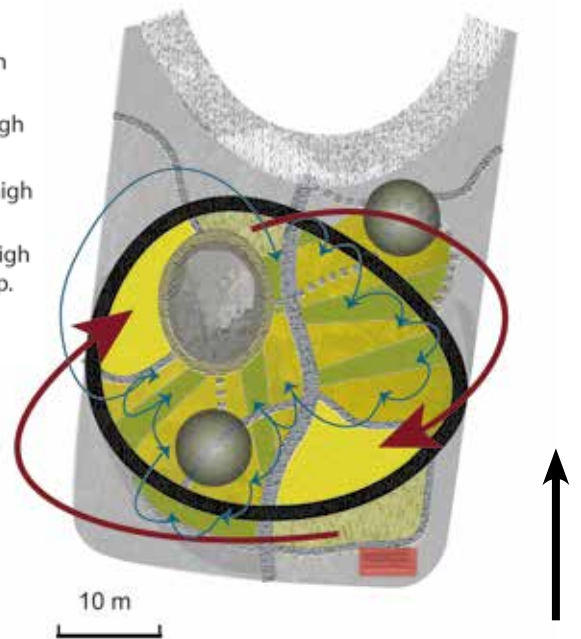


Decrease need for chemical fertilizers by design and Integration of UA with management of organic waste:

By incorporating a compost in the design, a reuse of organic material is facilitated meanwhile a collection of organic material is encouraged, to enable the principle of **keeping it tidy**. Furthermore, the agricultural rotation contributes to fertile soil provided the organic waste material is reused and not thrown away (Havlin et al 1990; Thrupp 2009). The compost is placed in one of the corners, away from the more social places to avoid bad smell. This also addresses the principle to **Deal with smell from fertilizers if possible**.

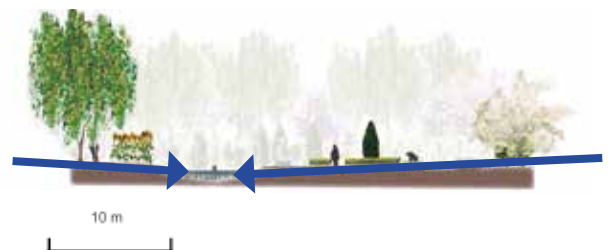
LEGEND

-  Plant; Ca. 1m high
Eg. Brassica ssp.
-  Plant; Ca. 0.5m high
Eg. Allium ssp.
-  Grain; Ca. 1.5 m high
Eg. Triticum ssp.
-  Plant; Ca. 2.5 m high
Eg. Helianthus ssp.
-  Compost



Regulation of run-off water:

No water should run from the park-area with edible plants to avoid nutrient or potential pesticide pollution. Therefore, the park has got one low point quite central in the park where the run-off water goes by heavy rains or watering.



Principles Not Addressed

Three principles were not addressed because species of plants are not specified in thesis, only exemplified. These principles are the following.

Use native plants

Use low maintenance crops and plants to avoid decay if interest is low

Use crops resistant to wear and tear of children's play

Furthermore, **Use rooftops when it is possible**. was not exemplified due to an angular roof ridge making use of them impossible.

DISCUSSION AND CONCLUSION

The purpose of this thesis was to assess the existing situation concerning UA in Xi'an and its place in the city's green infrastructure by analysing the UA effects and potentials. Furthermore, this thesis was aiming to determine some design principles, which could support environmentally and culturally beneficial practice of UA for food production in Xi'an.

The research questions asked in order to achieve this was

1. What effects and potentials can UA pose as a part of Xi'an's green infrastructure?
2. How can environmentally and culturally beneficial practice of UA for food production in Xi'an be supported?

Concerning the first research question, there are many gaps that needs to be filled about UAs effects and potentials before planned UA should be implemented in Xi'an. For example, it is important to know which crops are ecologically suitable to use in Xi'an. Another important but complex question is how to irrigate without wasting freshwater and furthermore, without polluting crops. In the implementation of the *Design Principles Part 2*, suggestions are made on how to address certain issues determined throughout the process of this thesis, however, it would take a more thorough investigation and a detailed proposal on each and every principle to know whether it would work in practice, alternatively, a practical implementation and thereafter an assessment of it.

Despite the need for more research, people in Xi'an were concluded to have an interest in the practice of UA. Taking into consideration the long historical, but now rapidly changing, connection between agriculture and China, effecting not only Chinese economy but also thought and family structures (Jin 2007; Dikötter 2012; Renren 2009), this came as no surprise. The result of this thesis can therefore eventually, when complemented with further research, be used in other contexts in Xi'an than

only the neighbourhood Chang le, which residents considerably contributed to the result.

However, with this in mind, it is important to underline the design principle which encourage local adaption of the developments of UA to the specific community and their users (Smit and Bailkey 2006) and the design principles which encourages inclusion of various users, managers and stakeholders in the process of integrating agriculture in the urban landscape (Mubvami and Mushamba 2006). After a thorough investigation of the local conditions, not least social and cultural ones, potential adjustments of the design principles to the specific community should be made. This is especially important since Xi'an inhabits various minority people (Hansen 2012) meanwhile the design principles concluded in this thesis, to a large extent are based on the classical gardens of China which doubtfully are culturally connected to all minorities in Xi'an.

When implementing the design principles in the example of this thesis, the residents were invited to contribute to additional design principles through interviews. The managers of Chang le were also invited but declined. The interviews with the residents only contributed to the organisational part of the design principles. Better would have been if they also would have contributed to shaping the *Design Principles: Part 1* and/or the implementation of *Design Principle: Part 1* as well. Perhaps contribution could have been made not only through interviews but also, tentatively, through a workshop. Furthermore, it would have been good to have more interviews to be able to make an accurate quantitative analysis of people's perception of both the countryside and the UA into the area.

It is also important to discuss the selection of interviewees in Chang le. The interviews were made with people moving within the area, particularly in the park area as these people were the ones that had time and wanted to participate. This means that the opinions of potential groups of people that do not like to stay in or pass by

the community park were excluded from the research. The observations were partly supposed to shed light on how many people that chose to pass through the park and how many people that chose to walk within, however, as for the activities within the park, there were no research made on the opinions of the non-users of the park. The non-users of the park could have been reached by selecting interviewees through door-knocking or by conducting surveys through questionnaires left in their homes and later collected.

The interviews with the residents in Chang le may have been further effected by their perception of me and what answers they thought I wanted to hear. Interviews may not always be accurate (Ekström & Larsson 2010). However, this applies to the results of the observations of activities in Chang le community park as well. It is likely that my presence affected how people moved and lingered in and around the community park (Ekström & Larsson 2010).

Beside ethnical differences, also socio-economical differences must be taken into regard if implementing these design principles in another context. When doing the inventory of UA in Xi'an through cluster sampling, it was not only the geographical generalization of the method cluster sampling, that may have contributed to inaccuracies (Khan 1998) but also the inevitably, homogenous selection of accessible communities and neighbourhoods. Many communities were impossible to enter due to guards and/or gates. The inaccessible communities were seemingly wealthy communities meanwhile, the communities most easy to explore were seemingly poor or middleclass. It appeared as if the poorer the area, the easier to access. This means that the agricultural practice or non-practice of the wealthy class could be underrepresented in this study and considering the connection between the practice of UA and the poorer population (De Bon et al 2008), that inaccuracy might be quite severe. For this reason, the cluster sampling, was only made as an indication of interest and a collection of examples of different agricultural practices in the city. For correct quantitative data over the agricultural practice in Xi'an, a special certificate from the Xi'an government would have been required and for this study, time was not enough. In addition,

this issue extends to the data collected in the neighbourhood Chang le. Chang le is a seemingly poor to lower-middle class area and can only represent similar communities.

Another factor that may have affected the result of the cluster sampling was the season. Because the cluster sampling was made in spring it was sometimes difficult to determine whether a plantation was agricultural or not. Plantations that could not be determined were not included in the study. It is also possible that people during the inventory, still had their young plants inside. Additionally, my own ability to determine plants in China was another limiting factor. I did not have knowledge, nor time to get knowledge, to be able to determine all species, therefore generalisations had to be done. The species I was insecure of, were not considered as agricultural. The above-mentioned limitations, can be assumed to have resulted in an underestimation of the extent of agricultural practice in Xi'an.

In contrary, some of the agricultural plants may not have been planted for agricultural purpose but for decorative. Even kale or onions could be appreciated for other qualities than provision of food. Since interviews were not conducted during the cluster sampling, the purpose could only be assumed. This may have caused an overestimation of agricultural practice in Xi'an. Most of these sources of errors could have been avoided with more funding's for additional use of an interpreter. Furthermore, this thesis did not analyse different ways and extent of UA plantations. There is a big difference between cultivating a few pots of onions and of remaking lawns into plantations of edible crops, however further analysis of this would require an inventory of each community and the actual possibilities of UA practice. Most communities do not have lawns to plant on. However, that does not change the fact that it results in a generalization of the interest of UA in Xi'an.

Language was also a constricting factor concerning the interviews, not only the interviews with the people in Chang le but also with the professionals. Neither me nor the interviewees were speaking their mother tongue which certainly resulted in loss of information and possible misunderstandings.

Also, when an interpreter was used, communication was difficult.

Furthermore, Chang le is not an ordinary community in Xi'an due to its large space and agricultural practice. It is also, despite that it is urban, located in the outskirts of the city. This can be discussed in regard to the few people that expressed an experience of a separation to the countryside meanwhile a high number of responders expressed a decline of the status of the agricultural countryside due to low farmers income and a loss of agricultural lands. Possibly, interviews with respondents residing within the second ring road, in a for Xi'an more representative neighbourhood, would have a different outcome concerning the question of an experienced separation to the countryside.

The analysis of Lynch's five elements was used on a neighbourhood scale instead of the city scale that it is actually meant for (Lynch 1960). Since the neighbourhood scale is less complex than the city scale, this should not have resulted in any severe inaccuracies, however it is possible that the elements in Chang le were oversimplified by using this analysis which may have caused a reduction of information.

Finally, this thesis can be concluded by stating that the small-scale UA this thesis treats has potential to contribute positively to urban areas in China and Xi'an, however first more research is needed. Hopefully, in the future, the design principles determined in this thesis can be a small contribution to achieve beneficial examples.

FURTHER RESEARCH QUESTIONS

Since Xi'an has a lot of ethnic minorities (Hansen 2012), it would be interesting to investigate one minority group's interest, for instance the Hui people's interest (Haw 1999) of UA and how to, based on their concept of UA and public space, develop design principles.

Because the wealthier communities could not be properly investigated in this study and because they can be assumed to have access to larger areas of land, it would be interesting to conduct a study specifically focusing on how to encourage UA in the wealthier communities of Xi'an.

It would also be interesting to see how a detailed, agricultural proposal for a specific neighbourhood in Xi'an can be made, with specific focus on native plant material and ecological farming techniques.

Furthermore, an investigation of how Xi'an residents within the second ring road are experiencing the urban-rural relationship would be interesting to read in the future.

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4. Mrs. Zhang Juan. Manager at Kong Zhong Nong Chang roof garden. Interview, 2017-03-09

APPENDIX 1

Under Appendix 1, the interviews with the professionals and the managers within the field of landscape architecture or urban agriculture are presented.

Interview with Associate Professor Dr. QIU Ling

Associate Professor Dr. QIU Ling, experienced within the field of landscape architecture planning with two PhD's in Landscape Ecology. One PhD was completed at the Northwest A&F University in Yangling, China, treating the use of biotope and sociotope mapping when planning urban green areas. The other PhD was completed at the Swedish University of Agricultural Science in Alnarp, Sweden, treating the subject of linkage between biodiversity conservation and recreational values of urban green space.

1. Could you describe the relationship between Xi'an city and the rural and agricultural surroundings, with regard to the urbanisation process taking place?

- Yes, I think with the impact of the urbanization ... so Xi'an has changed a lot even for the people, the rural people in Xi'an. There is very strange phenomena's. The farmer they don't want to be farmers, because the farmer seems like the poor class. A lot of people, especially the farmers, they want to move to the cities because the cities they have very high class facilities, "???" And also they can have a very high payment. So that is why because you know there is a lot population, it is very hard to occupy so much land so for the developers, they want to buy much more land to build high buildings, or residential areas or commercial areas to earn much more values. So, I think so far, for the people, most the people, they even know how dense the city are but they still want to move into the city. But another phenomena, is still strange, for the urban habitants, I mean the very deprived habitants living in the city, now they find more dense and dense, they are not comfortable at all in the city. Busy life and high traffic jam every day, and even for the very, you know, we have very severe air pollution, lots of problems, so people, even the for the rich people, or high salary people, the family household, they want to move out from the city, some of their dreams are: maybe we can move out from the city to buy a villa or a house nearby the city or some sub-street of the city, even sometimes: "Oh if I have some time and some money maybe I want to buy some farmland to be a farmer again". So that is very strange, for the different perspectives for the different people. For farmers, for the poor people they want to move to the city they want to see much more big pictures in the city life but for the urban habitants they want to move out. So, this is the kind of very strange relationship between the urbanisation and the urban agriculture right now. So, this is my opinions.

2. Have you experienced an increasing distance between Xi'an city and the agricultural countryside?

- Yes, I think so far we have some kind of distance, some distance is the geographical distance and sometimes it is in our minds, in our hearts, we still think "oh there is some specific distance between the urban-rural side and the urban areas but so far you know, nowadays, our government set up a policy, means building...- its kind of, I forgot, I'll just give you the direct translation in the means-, building the new rural countryside, we call it "??", but for the governor in the rural areas, I think they misunderstood this policies, you know, in their mind they said: OK we should tear down all the old houses, we should build much layers the housings, we should decrease the farmland,- try to follow the urban lives way in the rural areas. So, they misunderstood these policies, so I guess for our top governors, the policies, I think the main point is, we try to find a good solution to balance the rural development and the urban areas development, we should have some specific and distinctive characteristics between these areas. But so far it is framed because nobody wants to be a farmer, nobodys want to move back except for some rich people, some white-collar classes, they have some fortune and they want to move out from this urban life. So otherwise, most of the people for the rural area, for urban agricultural area, it is low, dirty, not advanced.

3. Have you experienced a change of status of the agricultural practice and life?

When I finished my studies in Sweden and went back to China I found Chinese urban green areas, the situa-

tion where the characteristics is totally different in than the Swedish situation. That is because in your cities you have very large, or in my mind I think it is large enough, so for each habitant you have enough out door environment, but for our Chinese people we have very limited common spaces, so maybe, I am thinking, we can try to use some urban agricultural land to be more green to be used as a green land for human recreation or any other services. I don't know but I try to focus on this aspect.

4. Would you say urban agriculture is common in Xi'an?

- Urban agriculture, maybe is a new word for Xi'an. Urban agriculture, at the beginning it should be totally different definitions, but now you combine them. Urban agriculture. I am not sure if Yangling is this place. Yangling is the new urban, or modern urbanisation development zone, very long names, this we call urban agriculture. So in my understanding, people don't understand what is the urban agriculture. For me urban agriculture should be smaller than a normal agricultural land, but also I think urban agriculture land should combine a lot of advanced technologies in to these agriculture, for "feed harvesting" or something, I think it should combine some urban stuff into the agriculture, so that is my understanding of what is urban agriculture. I think we have this in Xi'an, also as I told, in Yangling we call this modern urban agriculture development zone, you can check the English name, so here I think it's a kind of a Chinese urban agriculture modernization zone, in China. Even I think, so here, this was developed in 1999, so around 20 years ago, I guess it is still developing but we combine a lot of new advantages, and new research, technologies, facilities in to the agriculture. And we try to use this area to be kind of a "try feed". When we get successful results, we want to promote these results everywhere, so I think, you study urban agriculture in Xi'an, maybe take Yangling, because Yangling also belong to Xi'an. It is so strange because it is so detached geographically but it also belongs to Xi'an city. If you can check the zoon number, Yangling is district number 9 maybe you can take Yangling as a case study.

6. According to you, is urban agriculture more common within certain groups of citizens for instance depending on age, gender, background or income?

- Nowadays I think yes, at least a part of this. As I told you before, people, especially the people that live in the city, they have quite few opportunities to be close to nature in the city, so they want to be close to nature so maybe it is a good choice to be close to agricultural fields, so lot of developers they buy farmland field and try to combine with high modern technologies or economic, fruit trees, like apple trees or strawberries or other berry fields. So, they just build up some kind of "pick-up" garden areas. So, this is also kind of urban agriculture land. Especially in the weekend a lot of people go there, to have fun, to be with friends, so I think nowadays some of the habitants would like to use these urban agricultural lands.

7. Should agriculture have a part in the urban green infrastructure of Xi'an?

a. *If Yes, what part should it have? Does it fulfil that part today?*

i. *If previous answer was that urban agriculture does have a part in the urban landscape of Xi'an but its part is not fulfilled: Do you have any proposal of how to facilitate for and encourage urban agriculture?*

ii. *If previous answer was that urban agriculture does have a part in the urban landscape of Xi'an and that its part is already fulfilled. Move on to question 10.*

b. *If No, why not?*

- Definitely, yes in my mind, definitely. It is quite important part to be integrated in the urban green infrastructure? So far it is not good, because the agriculture field still hasn't got so much attention from our governors or developers, because they think that compared to commercial buildings, residential buildings the farmland it can only give a few of fortunes, so they want to transfer the agricultural field to any kind of commercial buildings, so they want to change that land use. But so far it is not good. But I think, if we in the long term think about our today's air pollution, traffic jams, the social problems: People have so much ? or open space for being together and have recreation, I think we should, or our governors or any other stake holders, try to change their attention or try to put much more attention on this kind of (feed?) fields. I think it is promising aims for the future.

To build green house, cultivate strawberries and fruit and to make the land a pick up garden and attach a restaurant or canteen- can be away to make it attractive. So on the weekend there is a lot of people nearby to visit. The scenic area to be used. Another way is to build a Holland "tulip" specific the flower botanical gardens, or some agricultural field demonstration areas, so it can be like an agricultural park or like an agricultural demonstration area. Try to design more interactional activities, it encourages much more people to

be involved in this area. I think that should be a good idea to promote and to stimulate people to participate in this area.

Do you know of any examples where planned or spontaneous (not planned) productive gardens exist, within Xi'an city?

- I think Xi'an have some but so far it is not clear but I will ask my colleague or check some by internet, you can leave your email, and once I know some specific location I will send it to you. But I think Xi'an should have some.

Interview with Associate Professor Dr. Yang Zhenchaos

Associate Professor Dr. Yang Zhenchaos specialises on protected agriculture in science and engineering and has been involved in various agricultural projects not only in Shaanxi province but also other parts of China. He is personally interested in urban agriculture and takes part in planning agricultural parks and the green houses within.

1. Could you describe the relationship between Xi'an city and the rural and agricultural surroundings, with regard to the urbanisation process taking place?

- Near Xi'an city there are many agricultural demonstration parks, for instance the one in Yangling where you have been. Furthermore, in the south of Xi'an there are several agricultural parks for example one that focuses on flowers, one on green houses and another about leisure agriculture or vegetables. China made a rapid progress recently and people have so much money but there is a lack of safe agricultural products and food and the people in the city want to leave the city and be closer to nature. So many people want to go out of the city and go to the rural areas to enjoy the fresh air, vegetables and fruits. Therefore, the government and some manufacturers have built these kinds of agricultural parks. Also, there is another reason why these agricultural parks are popular, in China most citizens have immigrated from the rural area to the city for about 30-40 years ago and they want to go back to the rural area. They want to experience their childhood memories again by picking some fruit and digging in the soil and smelling the grass.

2. Have you experienced a separation (geographical, emotional or mental) between Xi'an city and the agricultural countryside? Please explain.

- In China people love the countryside very much. When there is time or holiday people go out to the countryside. There is no separation. But maybe the distance can be a problem because they have to drive to the countryside. If it is too far, if it takes more than 1 hour to go out, it is not good. There is another question that might concern this question namely "which agricultural park is good?". Someone might go to an agricultural park to buy some safe and good agricultural product, someone might go to enjoy the fresh air. In China, environment is not good and most of the city dwellers want to go out from the city to enjoy the fresh air but they do not know where to go. There are so many agricultural parks, they do not know which one is good.

3. Have you experienced a change of status of the agricultural practice and life?

- Before year 2000 there was nearly no agricultural demonstration parks in China, after that people got so much money and then a demand of the agricultural parks started growing. Recently, the change of these kinds of parks, about ten years ago rural agricultural parks focused on the cultivation product and sale and this kind of agricultural park was very popular at the time but recently we solved the question of food requirement, about fresh vegetables and food. People get enough food. Therefore, agricultural parks have started focusing on the leisure of the agricultural, not the product. This is a recent change. Concerning the work of the farmer it has become better but less popular during recent years. In China the farmers' income are small. Also, there are so many people in China, about 80 percent are farmers and most of them have no money, they are poor. Most of them want to study hard, get into the university and become a teacher, engineer or another profession. Even though the agricultural park is becoming more popular the income of the farmers is not enough. However, I have heard that the government encourages the farmers to go to the agricultural demonstration projects and the government help them build the base, such as irrigation systems and electricity. Maybe in 10 years more people will want to work as farmers.

4. Would you say urban agriculture is common in Xi'an?

Yes. Xi'an is an old city but recently the government made a program and a plan to build a big city, maybe two or three times the Xi'an city. So around this area of Xi'an city there are many agricultural demonstration projects or rural-economical compositions. It is very common.

5. According to you, is urban agriculture more common within certain groups of citizens, for instance depending on age, gender, background or income?

-Almost all the citizens want to have some agricultural cultivation but only some of them have the land to do it. And the people who have the land rarely have the knowledge, the technology nor the time to do it at home. All of the people in China want to do something connected to agriculture. One reason is that most people miss agricultural life, another reason is that people have money to buy plants for vegetables or flowers. In China only farmers have plantations because the city dwellers have no land and no right to buy land. However, they want to cultivate and this is the problem. In China children, young people, elder people- all of them like agriculture and the good environment in the rural area so to answer your question: All the people.

6. Should agriculture have a part in the urban green infrastructure of Xi'an?

a. *If Yes, what part should it have? Does it fulfil that part today?*

i. *If the previous answer was that urban agriculture does have a part in the urban landscape of Xi'an but its part is not fulfilled: Do you have any proposal of how to facilitate for and encourage urban agriculture and make its part fulfilled?*

ii. *If the previous answer was that urban agriculture does have a part in the urban landscape of Xi'an and that its part is already fulfilled. Continue with next question.*

b. *If No, why not?*

- Yes. People want to go out from the city and enjoy the fresh air. Someone like to dig the soil, someone want to harvest the fruit and someone want to breath the fresh air and enjoy the flowers and someone want to play games in this kind of surroundings. So, what part should it have, I think, whatever part, every part. Some manufacturers and agricultural demonstrations suppliers can let citizens rent small parts of land where they can cultivate themselves, from sowing to the harvest. However, in the city there is no land, this can only be done around the city. It can be suggested for some manufacturers to create plans on the top of the building in the city or to have some small facility where citizens can plant on a platform. Around the city on the other hand, we have to build many agricultural parks. In the weekend a lot of citizens will drive to the agricultural parks to take part therefore the manufacturers need help to improve the facilities and also to improve the communication platform. Where can one go and what kind of agricultural parks are there? It takes a platform to present this. Maybe the government can help build this kind of internet platform and have the citizens know where they can go.

7. Urban agricultural initiatives in the developing zone of Xi'an, seem to be quite common and prioritized, do you know of any examples where planned urban agricultural gardens exist within the third ring road of Xi'an? If not, do you have any idea why there is not so many examples of this?

- Last year I took part in a problem concerning the design of a roof garden but I do not think they have built it. I do not know of any examples of this in Xi'an. Roof gardens are complicated because the load and the irrigation system. Most older roofs cannot be cultivated on but maybe during the next years, new buildings can apply this kind of technology.

8. Do you have any examples where planned urban agricultural initiatives exist in Xi'an and it's extension that you would like to emphasise?

- Xi'an Feng dong Modern Urban Agricultural Demonstration Park and the supreme vegetable garden in Yangling.

9. What benefits and difficulties can you come to think of concerning agriculture in Xi'an and its extensions?

- The product and the management level is not good. So, all the farmer and the owners of the agricultural park have to learn from for example Taiwan and Europe and America, how to manage the farms. The good thing is that the government and the people, the rich people, have come to build these parks for all of the people. There is a very big market. The government has also made a policy to help create these kind of demonstration parks. We have so many problems and questions about this but I think in the future it will be very

good for China.

Interview with Associate Professor Dr. Zhang Yong

Associate Professor Dr. Zhang Yong has a master degree in landscape architecture and are now working specifically with green houses mostly in urban areas. He has been working with design of agricultural demonstration parks for about 10 years where he specifically works with the design of greenhouses. He also grows potatoes himself.

1. Could you describe the relationship between Xi'an city and the rural and agricultural surroundings, with regard to the urbanisation process taking place?

- In China the urban place and the rural place has a clear borderline, 'this place is downtown and that is a rural place', - they are very different. The relationship is the food supply and the population of the people. The rural place supply the population to the urban place. Now there is a new trend, some urban dwellers find places to build vacation houses and gardens on in rural areas but for the Chinese situation the government have some rules to avoid that this occurs. China has a huge population there is not enough land to build villas like this.

2. Have you experienced a separation (geographical, emotional or mental) between Xi'an city and the agricultural countryside? Please explain.

- The big separation is the lifestyle. People who lives in the cities have a different lifestyle than the people in the rural place. In the city life is colourful, on the countryside it is not. Life there is hard. This is a big separation I think. Emotionally I do not think there are any big separation. Many people go to the city and live in the city. Now in China many cities are changing their policies to welcome the rural people to the city.

3. Have you experienced a change of status of the agricultural practice and life?

- For the people who live in the rural place the agricultural practice is all work, they grow the plants and vegetables just for life. But in the urban areas few people have agricultural experience. But now, there is a new trend, some people in the cities invest a lot of money in the rural place to create big farms controlled by firms or companies to produce food. They do the agricultural practice in different levels. People who live in cities now invest in firms and companies to practice agriculture, but more advanced. The agricultural practice is developing and changing.

4. Would you say urban agriculture is common in Xi'an?

- In Chengdu it is more common, in Xi'an not so much. It is not very common.

5. According to you, is urban agriculture more common within certain groups of citizens, for instance depending on age, gender, background or income?

- People 50 years and older that make money in the city and have a dream to go back to the countryside and therefore invest in firms or companies to do the agricultural practice, or something like that.

6. Should agriculture have a part in the urban green infrastructure of Xi'an?

a. *If Yes, what part should it have? Does it fulfil that part today?*

i. *If the previous answer was that urban agriculture does have a part in the urban landscape of Xi'an but its part is not fulfilled: Do you have any proposal of how to facilitate for and encourage urban agriculture and make its part fulfilled?*

ii. *If the previous answer was that urban agriculture does have a part in the urban landscape of Xi'an and that its part is already fulfilled. Continue with next question.*

b. *If No, why not?*

- Yes, I think so. I don't know why but it may be a new trend. Urban agriculture can make the young people who live in the urban area have a real connection to nature. Furthermore, it can change the temperature of the site and change the circulation of water in the city. It can absorb the water and evaporate it to the atmosphere. Agricultural parks is a good idea and green roofs are other ways. Maybe we can build more greenhouses in the urban sites. We can combine the greenhouses with the places we live in and work in. We can practice vertical horticulture. There are many things we can do. Urban agriculture can be made better in this

way for the future cities. We can combine many things, the PV-panel with the building and the horticulture with the building of working and living.

7. Urban agricultural initiatives in the developing zone of Xi'an, seem to be quite common and prioritized, do you know of any examples where planned urban agricultural gardens exist within the third ring road of Xi'an?

- There are many places. Along the Tanghe road there are many restaurants on the top of the roof with cultivations and also in Datang Xishi.

8. Do you have any examples where planned urban agricultural initiatives exist in Xi'an and its extension? Xi'an Feng dong Modern Urban Agricultural Demonstration Park and Qujiang agriculture park.

9. What benefits and difficulties can you come to think of concerning agriculture in Xi'an and its extensions?

- (For benefits see question 6.) Difficulties are that urban dwellers are very lazy. They are tired from work and have no time to take care of the plant. I think this is a big problem for the agricultural park and practice in the urban areas. They have no time nor energy. I told you that people living in the urban areas and are 50 years and older, they have spare time to do this. Another difficulty is that the land in the cities is more expensive. People do not have the money to buy the land or the place to practice the agriculture. Maybe the government should design some places where people can practice agriculture for free. Today some people who live in the city rent some places to practice agriculture but they are rich, it is not for poor people. We cannot fit the supply to the demand.

Interview with Mrs. Zhang Juan

Mrs. Zhang Juan is the general manager and the investor of the roof garden Kong Zhong Nong Chang where she is now working full time. She was born and raised in Xi'an but on the countryside, her parents still live in the countryside where they are growing their own vegetables. Earlier, Mrs. Zhang was working with sales of construction material. The idea of starting a roof garden was founded in her personal interest in gardening and cultivation of vegetables and flowers. She travelled to the city Shenzhen in the south of China to do some research about this kind of initiatives. Mrs. Zhang has financed the project entirely herself and the garden was opened in October 2016.

1. What have you done before and how did you get the idea of starting this agricultural garden?

- I started the roof garden. Before I sold construction material. I got the idea of starting the roof garden because I have got a personal interest in planting vegetables, flowers and gardening in general.

2. Have you got parents or grandparents who were farmers?

- Both my parents still live in the country and are practicing agriculture. They grow vegetables for themselves. They do not want to live in the city, they prefer life in the countryside.

3. Has the municipality of Xi'an had any part in the development of this rooftop garden?

- The roof garden is the only one, like this, in this province, not only in this city. I have been to Shenzhen which is a very developed city in the south of China to do some research for this kind of gardening but actually this idea was my own idea and I did all this with my own stuff. I invested all from my money. No help.

4. Why do you practice urban agriculture?

- I think I really want a combination between the urban and the rural life. I want to put the two things together. So this is what we can see today. So right now, in the city of Xi'an a lot of the roof are not occupied, they are empty. So I think we can do something, right here on the roof. So, we also have land and a field in my ancestral home in the country side, but I don't want to do it in the country. I want to do it in the city.

5. What is your vision with this garden? What do you want to accomplish with this garden?

- To be frank, I am not quite satisfied with what this is for the moment. It is not really what I have expected. We want to do something different. There is a place down there, we want to add something for entertainment and for leisure. Maybe like, relaxation something. We have already come up with the drawings so it's the

plan for this year.

6. Are the products of your garden only for the practitioners of the garden or for commercial use as well? If it is for commercial use, who do you sell to?

- The majority of the vegetables right here are mainly planted by ourselves, but some parts are rented to customers so the customers can plant right here by themselves. That is the commercial part. But normally for the vegetables we don't have a big outcome, the production is not that big. So normally we give it away to family and friends. Anybody who are interested can do it. But normally it is people who live nearby. They usually bring their kids.

7. Do you work here on fulltime or do you have another source of income?

- This is my fulltime job. I am really dedicated and concentrate on this work.

8. Extra question: How long has this existed?

- It was built last October (October 2016), so only 5 months.

9. Have you noticed that some social groups of citizens have a higher interest in urban agriculture than others? (E.g. depending on age, sex or income?)

- This is completely depending on their personal preferences and interests and is not really related to their income or age or something else.

10. Have you experienced a change of status of the agricultural practice and life?

- 10 years ago, people who live in the countryside want to stay away from the country side, they want to live in the city. But today, most citizens admire the lifestyle in the countryside, they want to return to the countryside.

11. Have you experienced a separation between the urban dwellers and the agricultural countryside?

a. *If Yes, how is it manifested and what is your opinions and reflections of that separation?*

b. *If No, continue with next question.*

- Certainly, it has something to do with lifestyles. In the city, people are living in a fast-paced lifestyle and everything you see is concrete and steel and you don't see many greenery and trees. People sometimes get stressed by that. I feel like you are away, so far away from the countryside.

12. Do you consider urban agriculture to be common and popular in Xi'an?

- It will be more popular, it is going to be the trend for people living in the city.

13. Do you think agriculture should have a part in the urban green infrastructure of Xi'an?

a. *If Yes, could you explain what part? Does it fulfil that part today?*

i. *If previous answers were that urban agriculture does have a part in the urban landscape of Xi'an but its part is not fulfilled, do you have any proposal of how to facilitate for and encourage urban agriculture so that its part gets fulfilled?*

ii. *If previous answers were that urban agriculture does have a part in the urban landscape of Xi'an and that its part is already fulfilled. Continue with next question.*

b. *If No, why not?*

- I think not really for parks. Parks they have already enough vegetation and greenery so probably it should be combined with school, to make schools better or hospitals. I think we have taken the initiative, this is the first one we have so far in the province so it hasn't really gained ground yet. People are just learning and getting familiar with what this is and how they can do it themselves. People are still learning.

14. Does professional X know of any examples where other planned or spontaneous productive gardens exists, within Xi'an city?

- Currently I do not have a specific proposal for it. But I hope that the government can pay more attention to what I am doing right now. I hope they can have a policy or even sponsor. I hope more and more can pay more attention to us and join us. We really want to do it better in the future.

15. Do you know of any examples where other planned or spontaneous agricultural gardens exist in Xi'an?

- As far as I know this is the only one in Xi'an with both vegetables and greenery. I do know some places but they have only vegetation for greenery but no vegetables

16. Can you please explain how daily practical issues work, such as irrigation, harvest, fertilization sowing etc. works?

- Most of the sowing is done in the spring, in early April. Since the winter is very cold so if you come to months from now you would be seeing something totally different.

Interview with Mr. Sun Tao

1. What have you done before and how did you get the idea of working here at this agricultural garden?

- My major is biology. I studied for a long time, after graduation I worked at EF, Education First, they teach English for adults and children, But I always want to do something with connection with my major and I found an interest in gardening. I love plant and I love animals so this is a way to... it is kind of my dream here. So, I just to want to start my own business, like a small shop that sells flowers and also teach people how to raise them. But then I found this place. I saw an advertise on WeChat and it is such a big place where I can do most things. I have been working here for half a year. It is not my idea. It is from the city, they have the roof garden but I think the... Here in China, this industry, this kind of concept of doing gardening is still at the beginning, it has just started, so, so far in Xi'an this is the only one you can find.

2. Have you got parents or grandparents who were farmers?

- No.

3. Why do you practice urban agriculture?

- Because, in the west, in some developed countries, especially in the city, the space is very limited, so they want space to grow some vegetables. Normally if you buy vegetables in the supermarket it can be really expensive, so they want to find something like this, the roof of a building. I think here in China, especially in the cities, you see lots of buildings and roads of concrete, cement, and steel. You don't see many trees and vegetation. That is what we want to improve. Make a better environment in the city.

4. What is your vision with this garden?

- *What do you want to accomplish with this garden?* I hope this place can be a place for cultural exchange. Wester garden style is quite different then the Chinese garden style, so I'd like to have a fusion of both. The Chinese gardening pay more attention to sceneries and decoration. They want to create a scenery or a landscape for themselves but I think the western gardening they want the scenery or the landscape to be a part of the home, to fit in to a home.

5. Are the products of your garden only for the practitioners of the garden or for commercial use as well?

- If it is for commercial use, who do you sell to? Currently this is more to show for people, as inspiration.

6. Do you work here on fulltime or do you have another source of income? Yes

8. Have you noticed that some social groups of citizens have a higher interest in urban agriculture than others? (E.g. depending on age, gender or income?)

- There is no particular range of people in terms of age, status or work, whoever comes here will always be inspired. After seeing this they want to make a difference in their home- to do something like this.

9. Have you experienced a change of status of the agricultural practice and life?

- Nowadays, especially in the city, sometimes there is a food shortage, for the supply chain, on the other hand people also want more quantity instead of quality so sometimes people ignore the food security but in the end, the most important thing is, if we can all have organic food that is what we want to have.

10. Have you experienced a separation between the urban dwellers and the agricultural countryside?

- For my generation and my parents' generation there isn't a big gap between the city and the countryside, but if I have kids, their generation might not have this concept of what the countryside is, and they may not be able to recognise different crops.

11. Do you consider urban agriculture to be common in Xi'an?

- Yes, it will be a trend. Both for food security and for improving life quality.

12. Do you think agriculture should have a part in the urban green infrastructure of Xi'an?

- a. *If Yes, could you explain what part? Does it fulfil that part today?*
 - i. *If previous answers were that urban agriculture does have a part in the urban landscape of Xi'an but its part is not fulfilled, do you have any proposal of how to facilitate for and encourage urban agriculture so that its part gets fulfilled?*
 - ii. *If previous answers were that urban agriculture does have a part in the urban landscape of Xi'an and that its part is already fulfilled. Continue with next question.*
 - b. *If No, why not?*
- Actually, compared to the cities in the south of China, Xi'an doesn't really have a big area for vegetation and greenery in the city. But compared to the northern cities in China, Xi'an would be top three. We want to influence more and more people to have this kind of concept and idea to have their own garden, even in their balcony. It is to create a new way of life.

13. Does professional X know of any examples where other planned our spontaneous productive gardens exists, within Xi'an city?

- Yes, a museum, wester town market museum, that imitates this (not productive though), smaller than this one. Also, companies that makes roof garden to make their companies prettier. People are adapting to this idea.

APPENDIX 2

Under Appendix 2, the interviews with the residents of the neighbourhood Chang le is presented. The interviews are sorted in three categories, "Practitioners of urban agriculture", "Residents interested in practicing urban agriculture" and "Residents without interest of urban agriculture". Furthermore, the interviews are color-coded to get a better overview of which interviewees were mainly positive (Green), negative (Orange) or had more complex opinions (Blue) about the agriculture taking place in the neighbourhood.

PRACTITIONERS OF URBAN AGRICULTURE

Interview #1: Age: 40 years Gender: Man Ancestral home: City of Yulin, Shaanxi province.

1. **Have you got parents or grandparents who were farmers?** My mom comes from the countryside. She used to plant wheat and corn and another kind of grain from the north of Shaanxi called, "Shami".
2. **What is your view of agriculture?** Agriculture is important, no matter where you live everybody relies on agriculture.
3. **How would you compare agricultural and rural lifestyle with city lifestyle?** I think the city is better in terms of transportation and the roads and also I think that the people in the city are more civilised in many ways so I prefer to live in the city.
4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** I feel like the countryside is not that far away. I used to live in the countryside for a couple of years and I have not experienced a separation between the city and the countryside.
5. **Have you experienced a change of status of the agricultural practice and life?** Actually I think agriculture has always been playing an important role in society but during recent years, especially in my hometown, the focus has switched to coalmining. There is lots of coalmines in the north of Shaanxi, the industry has changed into mining industry.
6. **What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances?** It is really a disturbance to me and some other people who live here, because it is supposed to be greenery and lawns that looks nice for the people, when you see it you feel comfortable, but more and more people are doing plantations on the lawns. I think this is not nice.
7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** Actually, I also do some plantations here, I grow the Chinese green onion and some other vegetables.
8. **Why do you practice agriculture in the city?** My father he does it, he is retired so he has time to do this, it is exercise for him. Also, we think that it is much safer than to buy it at the market.
9. **Do you know how and when agriculture started on this place? Was it intended for agricultural purpose in the beginning? Who can practice urban agriculture here?** I recently moved here so I can't answer this question. 90 % of the people practicing agriculture here are old, because they have the time. It is only the people living in this area that can do it.
10. **How does sowing/plantation, irrigation, fertilization and harvest work?** Actually, we do not use any chemical fertilizer, we get water from our home and we usually do the sowing around April.
11. **Are you satisfied with how this area functions concerning urban agriculture?**
There is room for improvement. The condition here, including the soil, sunshine and environment are not as ideal as on the countryside.

1. Have you got parents or grandparents who were farmers? I grew up in an agricultural family, we used to plant different kind of crops including the red dates.

2. What is your view of agriculture?

I think agriculture is really important for people. I think if you buy vegetables directly from the market it may not be safe. They might use chemical fertilizers. But if you plant them yourself they will be totally organic and safe.

3. How would you compare agricultural and rural lifestyle with city lifestyle?

I think living in the city is definitely more convenient in terms of transportation and shopping but I think if it is possible I would also love to live in the countryside because there is better air quality and a better natural environment and I can also cultivate there by myself.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside?

There is really no separation to me, especially considering my child. He is quite interested in the lifestyle in the countryside. Compared to the city, there is a slow-paced lifestyle in the countryside.

5. Have you experienced a change of status of the agricultural practice and life?

Now, most young people are not living in the countryside. Most people living there now are the old and the children. The young people are in the city making money. So, there are not as many people doing agricultural practice as before. More and more want to move to the city so I think agriculture is still important but in a different way today.

6. What is your opinion of the agriculture taking place in this neighbourhood, do you like it or is it causing you any disturbances? It is a good thing for people to cultivate vegetables, and it looks quite nice. I don't see it as a disturbance.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I actually have a place to practice agriculture here.

8. Why do you practice agriculture in the city? I think this is a great way to save time. I don't have to go to the supermarket to buy vegetables, I can just take it from the field. It is better too, better quality.

9. Do you know how and when agriculture started on this place? Was it intended for agricultural purpose in the beginning? Who can practice urban agriculture here? It is not just the vegetables but also the peach and the persimmon trees are planted by the citizens here so you can see that it has been here for a while. There are no strict rule who can do it and who can't. It was the elders that started it because they had spare time and now the fields kind of belongs to them.

10. How does sowing/plantation, irrigation, fertilization and harvest work? For irrigation, we normally save some water used to wash vegetables, we save it and water the plants with it. We do not use fertilizers at all, just water.

11. Are you satisfied with how this area functions concerning urban agriculture? I think the soil here is pretty hard which makes the vegetables grow badly. We had some pests here, we use pesticides to get rid of it

1. Have you got parents or grandparents who were farmers? My parents used to practice agriculture. They mainly cultivated wheat and corn.

2. What is your view of agriculture? To be honest, I personally haven't practiced any agriculture before but I still think that the government pays very close attention to the agriculture both now and in the past.

3. How would you compare agricultural and rural lifestyle with city lifestyle? I think in the countryside there is a better environment in terms of air and water, there are also less people and less noise there. In the city it is just the opposite. There is a difference.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside?

I don't see any separation myself because the countryside is very close to where I live now and also, there

are plantations in this neighbourhood which makes it feel like a combination of urban life and rural life. Nowadays actually, more and more people, in the past they lived in the rural area but now they are moving to the city. Most young people they are away from the countryside, they are making money here in the big city. There are mostly elders and kids in the countryside. Most of the work on the fields can be replaced by machines today so there is not so much labour needed.

5. Have you experienced a change of status of the agricultural practice and life? Most children go to school and haven't had the chance to practice agriculture so when they grow up they do not have any interest in practicing agriculture.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? I think it is a good thing for people to do this but it is nice if they keep it tidy and neat. I think it is good for the environment and it is good for the people who live here so they don't have to buy vegetables from the market. Also, for the retired people it is kind of like exercise and entertainment, they do it for fun.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? Yes I do, I have a place here. I planted some garlic sprouts, Chinese cabbage and Chinese green onion.

8. Why do you practice agriculture in the city? I think it is a good way to pass time. It is entertainment, I do it for fun. I really enjoy planting here.

9. Do you know how and when agriculture started on this place? Was it intended for agricultural purpose in the beginning? Who can practice urban agriculture here? People started planting here around 8 years ago when it were lawns here and even parts without lawns. Gradually more and more people started doing the same thing and I felt that if there would be a place for me to do it, I'd like to do it too and I found a place to plant myself. If people do not clean up the wild plants, it can get very messy. If you plant instead, it looks neater.

10. How does sowing/plantation, irrigation, fertilization and harvest work? I plant according to the seasons and there are all seasonal crops and vegetables, I chose the right season to plant the right vegetables and also they are all organic. For watering, I use the water from my home. Sometimes I will save the water from when I have been washing vegetables to use for irrigation. When I cook noodles in my home I will pick vegetables to add.

11. Are you satisfied with how this area functions concerning urban agriculture? The soil is pretty good here. It's easy to plant here. I think that the best place to do the plantation is a place with enough sunshine rather than a place under a tree so I think after all it is a pretty good place. I think after all this is a neighbourhood and not a field so there are some limitation but if you can have a small place of your own it is a really nice thing.

RESIDENTS INTERESTED IN PRACTICING URBAN AGRICULTURE

Interview #4: Age: 20 years Gender: Woman. Ancestral home: Born and raised in this part of Xi'an

1. Have you got parents or grandparents who were farmers? Yes, they grew some common vegetables.

2. What is your view of agriculture? I think agriculture is really important to people in the city.

3. How would you compare agricultural and rural lifestyle with city lifestyle? I actually prefer the life in the countryside, it is something I am looking forward to. I think life in the countryside is very comfortable, it is quite peaceful, no pressure from work. It would be very relaxing living in the countryside.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside? I do feel that way. I have an aunt who lives in the countryside. Whenever I go visit her it feels as if I am in another world.

5. Have you experienced a change of status of the agricultural practice and life? I think agriculture is pretty important, especially when you plant something yourself it is going to be safe and clean. So, no matter where you live you always need to have vegetables and food that is from the countryside.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is

it causing you any disturbances? I don't think it causes any disturbances to other people's life. I think it is beneficial for people who live here. If you don't plant yourself, sometimes, one of the old men offers me vegetables when I pass by. Most people who do the plantations are elder people.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? Yes, I am interested. I used to grow grapes in the back yard in my ancestral home. Here it is all full so there is no place for me to grow.

Interview #5: Age: 27 years Gender: Woman Ancestral home: From the countryside of Weinan

1. Have you got parents or grandparents who were farmers?

Yes my parents were farmers. They cultivated wheat, sweet potato, cotton, and lots of other crops.

2. What is your view of agriculture?

I think that people haven't made the most of the fields in the countryside. Some of the fields are wasted by not being used or by not being concentrated.

3. How would you compare agricultural and rural lifestyle with city lifestyle?

In the countryside, there are only a few young people, most of them are elders or children. In the city, I can find my peers, people of my age. In terms of environment the countryside is much better than in the city and transportation there is getting better day by day.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside?

I don't think so. This area is pretty close to the country and the mountains so I can feel that atmosphere pretty easy, therefore I think there is no big gap between the city and the countryside.

5. Have you experienced a change of status of the agricultural practice and life?

I don't know much about agriculture but I do think that agriculture is not as important as before, because the real estate industry is developing so fast. People are just building houses everywhere and they have occupied the land in the countryside. The people in the countryside are less positive to farming then in the past. I also think that the government are not paying enough attention to agriculture today. My classmates wanted to plant some herbs for curing diseases but the government don't want to focus on them, they are focusing on the traditional crops instead of creativity.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? I think that the plantations of the vegetables can be done on the sides, but not in the centre in the park, that is for greenery.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I am quite interested. I haven't planted myself but I have taken something from there. I think the cultivations are private, I don't have the right to be there. But if I had a place I would like to practice agriculture here.

Interview #6: Age: 38 years Gender: Woman Ancestral home: Chang'an district in Xi'an, a rural area.

1. Have you got parents or grandparents who were farmers?

Yes, my family used to plant wheat and corn in the past few years but now the government want take that place away and build buildings on it so now we have planted trees on it, even though some parts of the field still remains.

2. What is your view of agriculture?

I think the government should slow down the process of urbanisation because I think the natural environment and the agriculture is so important to people's life.

3. How would you compare agricultural and rural lifestyle with city lifestyle?

I think life in the countryside is definitely more relaxing and slow paced but now we have to choose to work in the city so we have to make a balance between the two, so during the weekend we take our children back to the countryside to visit my parents.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside?

I feel like there is no distance to me. My hometown is very close, it only takes half an hour to get there by car so I can still live in both environments.

5. Have you experienced a change of status of the agricultural practice and life?

Agriculture has always been important in China, but nowadays, people who live in the countryside cannot rely on their farmlands or plantations to live a good life, they have to do something else. Some people chose to work in the city. I think agriculture is so important so people cannot live without it. Even if we have so limited areas for plantations we still keep doing that, we never quit.

6. What is your opinion of the agriculture taking place in this neighbourhood, do you like it or is it causing you any disturbances? I personally don't see it as a problem. I think it is a good thing that we can have some lawns or places being used meanwhile they can have their own vegetables, I think it is a good thing, it is not really disturbing my life.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I am quite interested in doing this but we are late. There is no place for us. I would do it if there were any place left to do it on.

Interview #7: Age: 82 years Gender: Woman. Grew up in: Weinan, from the countryside.

1. Have you got parents or grandparents who were farmers? Yes, we all lived in the countryside and cultivated wheat.

2. What is your view of agriculture? I think that society has changed a lot in the past few decades. Now there is a much higher production because of new technology. When I was young we didn't have that high production as now. I think that the society has developed a lot but people can still not rely on agriculture.

3. How would you compare agricultural and rural lifestyle with city lifestyle? I think that nowadays there is no big difference between the countryside and the city. Lifestyle in the countryside has improved a lot in recent years.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside? There is no separation, the countryside and the urban life is pretty much similar these days.

5. Have you experienced a change of status of the agricultural practice and life? People of my age don't pay so much attention to the trends but I think everybody needs food, and that comes from agriculture, so I think that is still important.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? It doesn't matter to me.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I would like to do it if I had a place but I am quite old so I don't think I can do it anymore.

Interview #8: Age: 50 years. Gender: Woman Grew up in: From Shaanxi, a rural area.

1. Have you got parents or grandparents who were farmers? Yes, both my parents and grandparents cultivated corn and wheat, mainly.

2. What is your view of agriculture? In my hometown people are still, to a high extent, practicing agriculture, also wheat and corn.

3. How would you compare agricultural and rural lifestyle with city lifestyle? In the countryside, there is a lower cost of living because I have my own house and I don't have to pay for the rent. Here in the city the cost of living is higher, one has to buy everything. In the country side the air quality is much better than in the city, however in the city it is much more convenient to consume.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside? I do feel as if there is a separation because I have been working in the city for a couple of years but my parents and relatives are still in the countryside and I want to visit them as often I can, so I feel there is a separation. It takes a couple of hours to go back.

5. Have you experienced a change of status of the agricultural practice and life? Nowadays, less and less people, especially young people will not choose to practice agriculture in the countryside, they will choose to go to the city to make money and a job. You cannot rely on agriculture to get money to support a family.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? I think it is a really good thing to do it. First, it is good for the air, it is

plants anyway. Also, if you want vegetables you just have to collect it from the field, you don't have to pay for it and it is also organic and totally safe.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? Truth is, I don't have a place, but I would if I had a place to do it on.

Interview #9: Age: 37 years. Gender: Woman. Ancestral home: From Shaanxi, a rural area.

1. Have you got parents or grandparents who were farmers? Yes, both my parents and grandparents cultivated corn and wheat and, in addition, small portions of vegetables.

2. What is your view of agriculture? I think agriculture is not as important as before. Nowadays we have all kinds of products as vegetables and fruits. People need other things than stable food as corn and wheat. People have lots of choices and they pay less attention to agriculture today.

3. How would you compare agricultural and rural lifestyle with city lifestyle? First of all, I think the education is much more advanced in the city compared to the countryside and also everything we do is much more convenient here in the city, there is much more rich resources available here. On the other hand, I think the natural environment on the countryside is a lot better, especially the air quality.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside? I don't experience a separation. My hometown on the countryside is not very far away from where I live now.

5. Have you experienced a change of status of the agricultural practice and life? I think there is a change, especially for the young people, most of them want to leave the countryside and go to the city to work, but also for the middle-aged people, their generation, they do not treat the agricultural practice as seriously and carefully as before. They think it won't bring them so much wealth so they do not pay very much attention to it.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? I personally think that it is ok if they only do the plantations on the sides of the houses, as long as they keep it tidy and neat.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I am interested but I have no place. They were all taken by the people who came earlier than me. (The interviewee had been living there for 9 years)

Interview #10: Age: 70 years Gender: Woman Ancestral home: Urban area of Chang an in Xi'an

1. Have you got parents or grandparents who were farmers? My mom used to do plantations in the countryside but my father used to work in the school. We mainly planted wheat in the summer and in the autumn, we mainly planted corn.

2. What is your view of agriculture? I think agriculture is really important because everybody relies on agriculture. We have to eat. But nowadays there is a trend to move in to the city because some of their lands are taken by the government. The government build high buildings on their land.

3. How would you compare agricultural and rural lifestyle with city lifestyle? I think in the countryside the air is definitely fresher and better than in the city and there is less people, less traffic and less noise but on the other hand if you plant vegetables yourself it is much safer than if you buy it from the market, no matter if you are in the countryside or in the city. However, planting your own vegetables is not so common, it is only for a few people.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside? I feel like there is no separation to me because my hometown is not far away from where I live now so I can go back and visit my relatives on holidays.

5. Have you experienced a change of status of the agricultural practice and life? I think agriculture is still important. People who live in the countryside, if they can they will still prefer to plant vegetables by themselves. The government is also paying very close attention to the agriculture today. They offer subsidies to people practicing agriculture.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? I don't see it as a disturbance. People only plant on the sides and in the

corners, not in the central part, so I don't see it as a problem.

7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** I have no place for it but if I could have a place for it I would like to do it myself but I don't live on the first floor. It would be very good if I could have a place.

RESIDENTS WITHOUT INTEREST OF URBAN AGRICULTURE

Interview #11: Age: 62 years Gender: Man Ancestral home: The suburb of Xi'an

1. **Have you got parents or grandparents who were farmers?** No

2. **What is your view of agriculture?** I don't have an idea of agriculture.

3. **How would you compare agricultural and rural lifestyle with city lifestyle?** Currently, because of the ongoing urbanization during the past years, there is no big difference between the lifestyle in the countryside and in the city. Even sometimes in the countryside the quality of life is even higher than what it is in the city in terms of natural environment and air quality.

4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** I don't have a concept because I have been living in the city for all my life.

5. **Have you experienced a change of status of the agricultural practice and life?**

The policy for the rural area has improved the lifestyle of the rural people a lot and the government has paid more attention to the countryside so their living condition have been improving day by day.

6. **What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances?** People are not supposed to do it in the community, it is supposed to be greenery and lawns.

7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** I do not have a place to do it on and I also do not think agricultural plantations should be done in the community.

Interview #12: Age: 50 years Gender: Woman Ancestral home: I was born and raised here in Xi'an

1. **Have you got parents or grandparents who were farmers?** Yes, my grandparents. They planted mainly vegetables.

2. **What is your view of agriculture?** Agriculture is still important even if the city is developing so fast. We can't ignore the agriculture. It is getting more and more convenient than in the past, we can almost buy anything in the supermarket.

3. **How would you compare agricultural and rural lifestyle with city lifestyle?** I think in the countryside there is definitely better air and water quality and the environment is better. There are not very many people living there but here in the city there is a very high density of people, you see people everywhere and also it gets more noisy sometimes.

4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** Yes, the city is really separated from the countryside because nowadays, there is less and less land for farming. It feels like there is gap there.

5. **Have you experienced a change of status of the agricultural practice and life?**

I think suitable lands for farming are getting less and less because the government want to build on the fields, on the other hand agriculture is getting more and more important for people who live in the city since everybody needs food.

6. **What is your opinion of the agriculture taking place in this neighbourhood?** It is supposed to be lawns here, not vegetables. The fertilizers don't smell good.

7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** No I am not interested.

Interview #13: Age: 35 years Gender: Woman Ancestral home: Not in Xi'an but in a city

1. **Have you got parents or grandparents who were farmers?** No

2. **What is your view of agriculture?** Neither me, my parents nor grandparents have done any kind of cultivation of crops.
3. **How would you compare agricultural and rural lifestyle with city lifestyle?** Life in the countryside is not as good as in the city, the living conditions is not as convenient as it is in the city but the environment is definitely better on the countryside.
4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** Not really but I think people living in the city, sometimes they admire the environment in the countryside, they also go to visit the countryside on the weekends, because it's a natural environment.
5. **Have you experienced a change of status of the agricultural practice and life?** I think agriculture is getting more and more important because nowadays people pay more and more attention to their health and they think that the natural products are best for their health and consider this really important.
6. **What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances?** It is a bit messy to see people growing different vegetables everywhere. I think it is better to have lawns everywhere, it would look better.
7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** I am not interested in planting something myself. This is not a field, this is not in the countryside, this is a modern community, it shouldn't be like this.

Interview #14: Age: 33 years Gender: Woman Ancestral home: In the countryside of Xi'an

1. **Have you got parents or grandparents who were farmers?** My grandparents live in the countryside, they also had plantations of corn and wheat.
2. **What is your view of agriculture?** I think agriculture is pretty important to China because the majority of people, twenty-thirty years ago - most people relied on agriculture so even though the city has developed a lot we still cannot live without agriculture.
3. **How would you compare agricultural and rural lifestyle with city lifestyle?** I used to live in the countryside when I was a child, I think there is so much freedom there, and not too many people and I had a really great childhood there. But right now, I live in the city and I think life in the city is pretty convenient, the transportation and everything is so good. If you want me to choose between the two, I can stay in the countryside for a short time but I still prefer to live in the city, permanently.
4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** To me there is no separation. Now, life in the countryside is pretty similar to the life in the city. Besides, my grandparents they live quite close to us so we can still visit them in the weekend.
5. **Have you experienced a change of status of the agricultural practice and life?** The status of agriculture hasn't really changed. Agriculture has always been important to Chinese people no matter where you live, because everybody actually relies on agriculture. Also, I think it is really basic and fundamental needs for the people.
6. **What is your opinion of the agriculture taking place in this neighbourhood, do you like it or is it causing you any disturbances?** I don't think it affects my life. The vegetables can also be greenery, it can also be a part of the vegetation, it is good for the environment as well. My mom actually planted some vegetables herself.
7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** No, not so far.

Interview #15: Age: 27 years Gender: Man Ancestral home: In the countryside of Xi'an.

1. **Have you got parents or grandparents who were farmers?** My parents used to plant watermelon and grapes and sell it, but they don't do it anymore because land was taken by the government, to build buildings.
2. **What is your view of agriculture?** I think that we can really plant something by ourselves, but today, the fact is we don't have the land so we have to buy from the market.
3. **How would you compare agricultural and rural lifestyle with city lifestyle?** Back in the countryside, the relationship with the neighbours were really close, we could go to our neighbour's home without

knocking on the door, but here in the city we cannot do that anymore.

4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** It is the same, there is no separation. If I would go back to the countryside now, I would feel the same and live the same life.
5. **Have you experienced a change of status of the agricultural practice and life?** I have no idea about this.
6. **What is your opinion of the agriculture taking place in this neighbourhood, do you like it or is it causing you any disturbances?** It doesn't bother me at all.
7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** No I don't

Interview #16 Age: 18 years Gender: Man Ancestral home: South of Xi'an, near the mountains.

1. **Have you got parents or grandparents who were farmers?** My grandfather works in the military, in the army near the Qinling mountains and there is a yard for plantations there where he is in charge for that plantation where they are planting different kinds of vegetables.
2. **What is your view of agriculture?** Agriculture is really important no matter where you live. Everybody have to eat. You have to get food from agriculture.
3. **How would you compare agricultural and rural lifestyle with city lifestyle?** I think living in the countryside is very peaceful, you feel more relaxed there. Here in the city there are too much noise and traffic. That is the difference.
4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** Actually, I really prefer the life in the countryside. There are beautiful sceneries I can really enjoy in the nature. Here in the city the lifestyle is really fast-paced, it is hard for me to relax.
5. **Have you experienced a change of status of the agricultural practice and life?** In the past few decades the government and the people payed more attention to the agriculture but nowadays I think they aren't paying as much attention as before, because the people living in the countryside do not have much land anymore to practice agriculture.
6. **What is your opinion of the agriculture taking place in this neighbourhood, do you like it or is it causing you any disturbances?** It is a good thing to have some plantations here, even on the lawns. The quality of the vegetables here are much higher than the quality of the vegetables in the market.
7. **Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city?** Not really interested because of a lack of time and energy.

Interview #17: Age: 35 years Gender: Woman. Ancestral home: Chang'an district, Xi'an city

1. **Have you got parents or grandparents who were farmers?** My grandparents used to plant corn and wheat.
2. **What is your view of agriculture?** I think agriculture is important for China. Here, Chang'an district is pretty close to the countryside, I think people rely on the agriculture a lot, even in today's society.
3. **How would you compare agricultural and rural lifestyle with city lifestyle?** The ecosystem is really important no matter where you live, in the city or in the countryside, but it is also a double-edged sword. On one hand, if the rural area is developing very fast and is urbanised, the ecosystem will be effected, some parts will be destroyed but on the other hand, society has developed a lot. I think balance is needed between development and the ecosystem. I think the ecosystem is really important for human beings and for the next generation.
4. **Have you experienced a separation between Xi'an city and the agriculture on the countryside?** I actually work in the local government, I think especially in this area, the Chang'an district we have the best environment compared to other districts in Xi'an, because we are so close to the Qinling mountains and the government also try not to build more new buildings here in the future. What they want to do is to preserve the natural environment and ecosystems as much as they can.
5. **Have you experienced a change of status of the agricultural practice and life?** The local government has also done a lot for the local farmers and people in the countryside. They have given them lots

of assistance. Policies are made for the farmers so they can live a better life, including reducing the tax and support by providing with advanced techniques or free seeds.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? I think it is not good to plant vegetables here in the neighbourhood because it is supposed to be greenery and lawns and it is public as well, people shouldn't make it private. Additionally, the soil for lawns and greenery is quite different from the soil to plant vegetables, so I think if they really want to plant vegetables they can do it somewhere else, maybe in the countryside. However, most people who are doing the plantations here in the neighbourhood are elders. Because they are retired they have the time, and this is something they can do, also when they were young they used to live in the countryside so this is a part of their life, and sometimes they offer me vegetables. I don't think it bothers my life.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I don't have the time myself.

Interview #18: Age: 30 years Gender: Man Ancestral home: Weinan, in the countryside

1. Have you got parents or grandparents who were farmers?

My family has always been practicing agriculture. Even now. Mainly wheat and corn.

2. What is your view of agriculture?

I think the agriculture depends on the government and their policies. The life of the people in the countryside is still very hard, it is not as easy and good as in the city.

3. How would you compare agricultural and rural lifestyle with city lifestyle?

I think life in the countryside is more relaxing, slow-paced and with less pressure, but I think that infrastructure in the rural area is backwards, it is not as good as in the city.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside?

For me, no. I work in the city but I go back to the countryside on my spare time and live that kind of life that I used to live and do the same things as the people living on the countryside full time.

5. Have you experienced a change of status of the agricultural practice and life?

When I was a child I thought the crops and the grains are very valuable but today, I feel as if people don't cherish the food and the grains as they did in the past.

6. What is your opinion of the agriculture taking place in this neighbourhood, do you like it or is it causing you any disturbances? I think it doesn't bother my life but some parts of the plantations aren't neat and tidy. It is kind of messy sometimes. So, in terms of the whole environment for the neighbourhood, it still needs to be improved. The management department should do something, they should have some regulations to manage this area and try to keep it as tidy as possible.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I don't have time, but I would if I had time. Only a small area has the capacity to provide for a family.

Interview #19: Age: 65 years Gender: Man Ancestral home: In Xi'an in the countryside.

1. Have you got parents or grandparents who were farmers?

Both my parents and me, practiced agriculture, mainly cultivations of wheat and corn.

2. What is your view of agriculture?

I think right now it is a transitional period from traditional agriculture to modern agriculture. After the year of 1980 a new policy was established that distributed the land to the farmers. Each family was given a part of the field to cultivate on, but the capacity of those fields is so limited and can only supply for the family needs, it can't be made profit from it. The main conflict right now is that each family has their own land but the land is so limited and because of the scale, it conflicts with the modern agriculture. I think that the solution to this conflict is to make it in a larger scale in order to have a larger outcome. There are several types of agriculture in China, the first one is that each family in the countryside can have their own piece of land to cultivate on but the area is very limited, the second one are for some families who have really large scale fields, but that is only for very few people. The third one is the family owned farmland, which is relatively large in comparison to the previous once, the fourth one is when the government of the village own and

distribute the farmland.

3. How would you compare agricultural and rural lifestyle with city lifestyle? I think there is a big difference between the life in the country and in the city in the way people live, the environment, the quality of life and the cost of living. It definitely costs more to live in the city.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside? There is a separation between the country and the city. I think more and more people want to leave the countryside, they want to come to the city to work and make money instead of practicing agriculture. This is not balanced and it can be a risk for the future.

5. Have you experienced a change of status of the agricultural practice and life? I think the status has been changed and improved in some aspects. But it is not balanced. People in the countryside still live in an environment with backwards infrastructure compared to urban areas. I think it will take decades to bridge the gap.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? I think there are two aspects. The bright sides are that some people here originates from the countryside and they want to keep the countryside lifestyle and the habits from before, partly by growing food, secondly it is a way to save some money, third is that I think this is kind of good for the environment. The negative sides I think are the fertilization, it could be a pollution and sometimes they smell. After all, in the downtown you would never see this, this would never happen there. In recent years, fewer farmers want to practice agriculture because they aren't doing a big profit of it and also because the country now also relies on a lot of imported food, for instance some grains, whereby farmers can't do it their business, as they can't make profit of it. More and more consumers are prone to buy imported products, it is not balanced.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? I am personally not interested in doing that.

Interview #20: Age: 57 years Gender: Man Ancestral home: Chang'an district, in a rural area.

1. Have you got parents or grandparents who were farmers? Both my parents and grandparents cultivated corn and wheat.

2. What is your view of agriculture? I haven't been practicing agriculture for 20 years. My village has been demolished by the government. Now it is skyscrapers.

3. How would you compare agricultural and rural lifestyle with city lifestyle?

In the past when I lived in the countryside I was really happy. I knew everybody, my neighbours around me. It was great. But now, living in the city I feel as if I am living in a prison, I feel isolated, I don't know anyone, people are just strangers. I feel so bored.

4. Have you experienced a separation between Xi'an city and the agriculture on the countryside? Yes, I think they are completely separated. In the past we could have our own land, our own vegetables and food, but now in the city we have to pay for everything. In the past we could have our own vegetables whenever we wanted, and it was free and organic, but now, everything costs money. I feel it is totally different.

5. Have you experienced a change of status of the agricultural practice and life?

I think it is quite different today. I think agriculture has changed a lot. Right now, farmers who don't have enough land, or not any land at all, - if the land is taken by the government they will pay us so we are able to live in the city, financially.

6. What is your opinion of the agriculture taking place in this neighbourhood do you like it or is it causing you any disturbances? Personally, I don't mind if people are cultivating vegetables in the lawns as long as they keep it neat and tidy.

7. Have you got any interest in practicing agriculture in this neighbourhood or in another place in Xi'an city? Right now, we are pretty well off, we are able to get almost everything we want so I am not interested in planting myself.

APPENDIX 3

Inventory of the physical conditions of site:

Date:

Weekday:

Weather:

Noise (e.g. traffic outside the neighbourhood, traffic within the neighbourhood, music, people, birds):

Morning

Noon

Afternoon

Evening

Climate (e.g. sun/shade, still/ windy):

Morning

Noon

Afternoon

Evening

What causes potential shade: _____

Smells (e.g. blossom, food, fertilizers, exhaust, vegetation):

Morning

Noon

Afternoon

Evening

APPENDIX 4

Inventory of the human activities of site _____:

Date:

Time:

Weekday:

Weather:

Activity	# women	# men	# children	Where	Other